

A FLORISTICAL AND ECOLOGICAL SURVEY

OF

WEST LOTHIAN

BY

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A SURVEY OF THE FLORA OF WEST LOTHIAN.

I. ECOLOGY.

In this paper an attempt is made to give a general outline of the flora and the main plant associations of West Lothian; to correlate these with the geological, topographical, and climatic features; and to show the varying effects of Man's varying activities in modifying them. Since the survey was limited to two years' field work it was not possible to adduce direct evidence of progression or retrogression within the different plant associations. It had been hoped that such modifications might have been inferred from reference to previous records but on the commencement of field work it soon became evident that the localities previously surveyed were not defined with sufficient exactness to permit of this. Neither was the frequency of occurrence of the various species indicated in greater detail. In the circumstances, so far as this particular inquiry was concerned, the best that could be done was to lay a foundation in greater detail upon which future work on this most interesting and important question could be based. The method finally adopted was to choose definite lines traversing botanically variable tracts in the county. These lines were surveyed systematically and the associations through which they passed studied, the plants composing them listed, their relative frequencies noted, and the present delimitations of such associations recorded. By future observations and comparison it will be possible to show whether material changes in the composition of the flora are taking place and possibly the rate of change may be assessed. The present distribution of the vegetation is indicated on the accompanying map, on which are also shown the lines of survey. In the lists of plants which appear later, the nomenclature adopted is that which is used in Bentham and Hooker's "British Flora" 11th Edn. Before further discussion of these, however, a brief account of the physical features of the county is necessary.

WEST LOTHIAN, situated on the southern shores of the Firth of Forth and including the island of Inchgarvie, forms part of the Central Lowlands of Scotland. It is the third smallest of the Scottish counties and has an area of 120 square miles. From the coastline, which forms the northern boundary and extends for 17 miles, the county stretches in a south-westerly direction with an undulating surface. On the east the river Almond and its tributary, the Breich Water, flowing in a north-easterly direction, forms the boundary between West Lothian and Mid-Lothian, while more or less parallel to this the river Avon and its tributary the Druntassie Burn forms the boundary with Stirlingshire on the west. To the south-west, West Lothian adjoins Lanarkshire from which it is separated by an irregular and mainly artificial boundary.

GEOLOGY AND SOILS. The rocks of West Lothian belong to the Carboniferous series and consist principally of limestones, sandstones, shales and coal measures, with which are interspersed detached masses of eruptive and intrusive igneous rocks of the

Carboniferous

Carboniferous Age. To the east the carboniferous sandstone series, very rich in oilshale, form a succession of anticlines and synclines, dipping westward under the carboniferous limestone series of Bo'ness and the Bathgate Hills. In this series coalfields occur at Bathgate and Bo'ness. The igneous rocks are mainly intrusive in the form of batholiths and sills. All the more prominent hills of the county consist of igneous rocks of this nature, the denudation of the surrounding sedimentary rocks having led to the formation of the intervening valleys.

Over the low-lying parts of the county there is an almost continuous covering of boulder clay ~~over the low-lying parts of the county~~ deposited by the Forth glacier during the great Ice age. This deposit of boulder clay considerably altered the topography of the district by filling up the existing river beds and necessitating the cutting out of new courses. Thus it has been shown that the river Almond originally entered the Forth at a point about a mile west of its present outlet. The eastward flow of the glacier is demonstrated by the presence along the coast of erratics, fragments of rocks, typically found in Perthshire and the neighbouring districts, also by the presence of striae on the rock surfaces running in an east and west direction, and by the "crag-and-tail" formation at Binn Craig with the "tail" running eastwards.

There are many evidences of elevation and subsidence. The 100 ft. raised beach is present along the coast and runs southwards to the Edinburgh-Queensferry road at Dalmeny House. It occurs in the Almond valley as far up as Kirkliston and in the Avon valley up to Linlithgow Bridge. The 25 ft. raised beach is also present, extending along the coast from the mouth of the Almond almost to Bo'ness. In the neighbourhood of Bo'ness subsidence is proved to have occurred but efforts have recently been made to reclaim land in this district (the Carse of Kinneil) and over 154 acres have been reclaimed since 1854. At low tide large expanses of mud, which may one day be converted into arable land, are exposed at various places along the coast. These represent accumulations of silt from the Avon, the Almond and the Forth itself.

Alluvial terraces occur along the banks of rivers and streams. They are present at many places in the valleys of the Avon and the Almond, sometimes overlying the boulder clay, whilst at Kirkliston the fresh-water deposits form a thin layer over the 100 ft. raised beach.

The soils of West Lothian are, on the whole, good, and are well-suited for agriculture. They consist principally of loam, clay, light gravel and sand, and are derived mainly from the boulder clay and from the alluvium of rivers and streams. About three-quarters of the total area of soil is suitable for agriculture. In these districts the soil has been considerably altered by artificial methods and the existing flora has therefore undergone a considerable amount of modification, being largely replaced by agricultural crops and the weeds introduced

with

with them. Over considerable areas in the south and south-westerly parts of the county the soils are cold and wet, and there are large deposits of peat forming moors and bogs. In some cases artificial drainage has been used to convert such regions into arable land, the moorland flora being replaced by agricultural crops.

TOPOGRAPHY. The general slope of the county is from south-west to north-east, with the highest land lying in the west between Linlithgow and Bathgate, where the average height is 700 ft., with two points, the Knock and Cairnpapple, reaching to over 1000 ft. Roughly, the northern half of the county may be said to consist of two ridges with an intervening central valley, all more or less parallel with the coast, while the southern half is composed of undulating moorland. The first of these two ridges begins at Bonnytoun Hill, north of Linlithgow, and running eastwards through Binns Hill and Dundas Hill, reaches the coast at Mons Hill near Dalmeny. The second ridge starts with the high ground already mentioned between Linlithgow and Bathgate, with Riccarton Hills to the east of it reaching a height of over 800 ft., and ends on Binn Craig which shows a characteristic crag-and-tail formation. These ridges consist almost entirely of igneous rock and while in some places they are bare and rocky, for the most part they form shapes of grassy pasture which are often cultivated on their lower reaches. The valley which lies between them is continuous on the west with the fertile Carse of Stirling and similarly is extensively cultivated.

The southern and south-westerly parts of the county contain large tracts of moorland. This area has an average height of 600 ft., and extends into Lanarkshire and Midlothian, gradually rising to the Gladsmair Hills (1177 ft.) in the south.

The watershed is formed by the Almond and the Avon with their tributary streams. The Barbauchlaw Burn and the Brunton Burn drain the district west of Bathgate and flow in a north-westerly direction to join the upper reaches of the Avon. Similarly the river Almond, with its tributaries the Culter Burn, the Riccarton Burn, and Breich Water drains the southern moorland. Further north, from the central ridge of hills, the Riccarton Burn, Mains Burn, and Brox Burn flow in a north-easterly direction, the first entering the sea at Abercorn and the two latter joining the Almond just above Kirkliston.

From this description of the topography it will be seen that there can be no wide range of variation in the flora. The greatest altitude being little over 1000 ft., there are no alpine associations. The higher plateaux are occupied by moorland species such as *Erica cinerea*, *Erica Tetralix*, *Calluna vulgaris*, *Carex* spp., *Juncus* spp., and *Sphagnum*s, while the hill slopes are principally pasture. The region of moderate altitude between the high-lying region and the coast contains a flora which is largely artificial and where not devoted to agricultural purposes the land is largely given over to artificial plantations which show few, if any, of the characters of natural woodland. The last traces of the original flora of this area are seen in Kinneil Wood, where there is still a small region of natural oakwood, and occasionally as small patches along the banks of

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permanent pasture. The principal crop is oats which ascends to a height of 900 ft., on the northern slopes and 1000 ft., on the southern slopes. Throughout the whole region of cultivation little of the original flora remains and many aliens have been introduced with the crops. It must be remembered that at one time this area was entirely covered with forest, oak forest occupying the lower areas, with birch and pine extending up the hill slopes and alder growing in marshy places. Of these natural forests nothing now remains in West Lothian beyond the small oakwood at Kinneil and growths of birch and alder in some parts of the river valleys. The existing woods have all been planted and it is found that in the primitive oak region plantations consist mostly of deciduous trees, while in the primitive pine and birch region they contain principally conifers. In some cases there is a mixture of deciduous and coniferous trees. The deciduous plantations commonly extend to the limit of cultivation, ceasing at 800-900 ft., on the northern slopes and 900-1000 ft., on the southern slopes. Since only very small areas in West Lothian exceed this altitude deciduous plantations are found all over the county. With these are interspersed the coniferous plantations but the latter are more numerous towards and beyond the upper limit of cultivation.

The region of hill pasture and moorland lies above the upper limit of cultivation. On the plateaux of the southwestern parts of the county, where there are large deposits of peat, moorland plants form the main associations, while hill pasture is found on the slopes of the higher hills between Linlithgow and Bathgate.

The general physical and climatic features of the area having been thus summarised, and the consequent regions of broad vegetative difference defined, it remains to discuss the botany of these regions in detail, noting particularly the variations in composition between and within such zones.

I. THE LITTORAL REGION. Although at low tide broad expanses of mud are exposed at Bo'ness and Blackness and large tracts of sand at Dalmeny, only algae are found in these regions and the actual littoral zone with which we are concerned is merely a narrow and by no means continuous strip along the coast. With the exception of the salt marsh at Blackness and the Dalmeny sand dunes it is composed principally of sand and shingle but is rocky in some places.

The Salt Marsh Association is present where mud and sand have been laid down on the flat shores to the east of Blackness Castle.

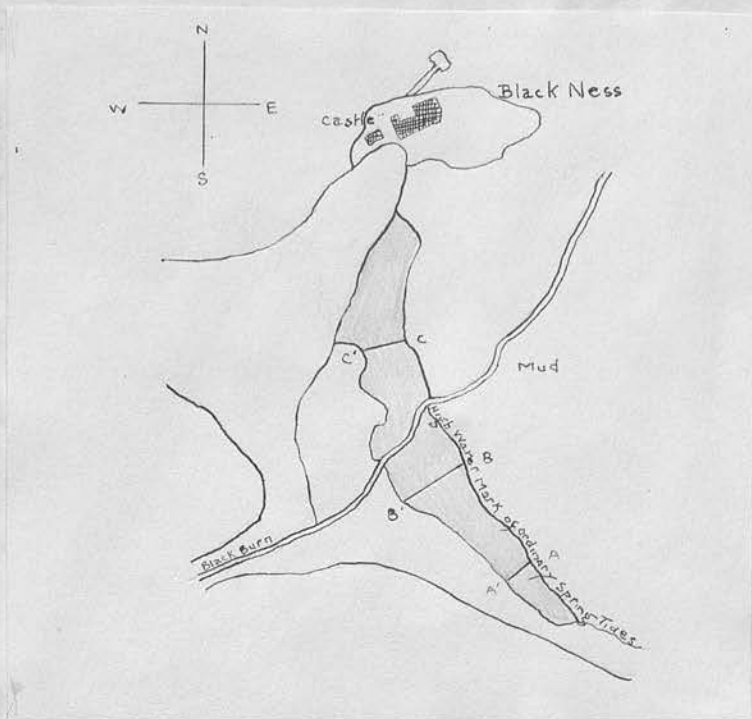


DIAGRAM I. Sketch map of Blackness Salt Marsh. The original salt marsh area is shaded. Scale 6 ins. = mile.

The gradual accumulation of mud has raised the surface of the formation so that it now lies above the high water mark of ordinary spring tides and is but rarely submerged to a slight extent. There has been, consequently, an invasion by non-halophilous species and in many places the vegetation is practically the same as that of inland pasture. There is, however, considerable variation in composition from place to place, according to the amount of ground water present, the percentage of salt which it contains, and accidents of colonisation by different species. The halophilous species present within the area include *Cochlearia officinalis*, *Spergularia marginata*, *Aster Tripolium*, *Armeria maritima*, *Atriplex patula*, *Glaux maritima*, *Scirpus maritimus* and *Glyceria maritima* but these are not at all frequent and are somewhat local in their distribution. As shown in the accompanying sketch map, transects were taken across the marsh at the three places indicated in the sketch map (A - A¹, B-B¹, C-C¹) and at intervals along these transects counts were made of the number of species occurring in a square yard, at intervals. That the area as a whole is losing the general characteristics of a salt marsh and is becoming converted into pasture land is shown by the following tables :-

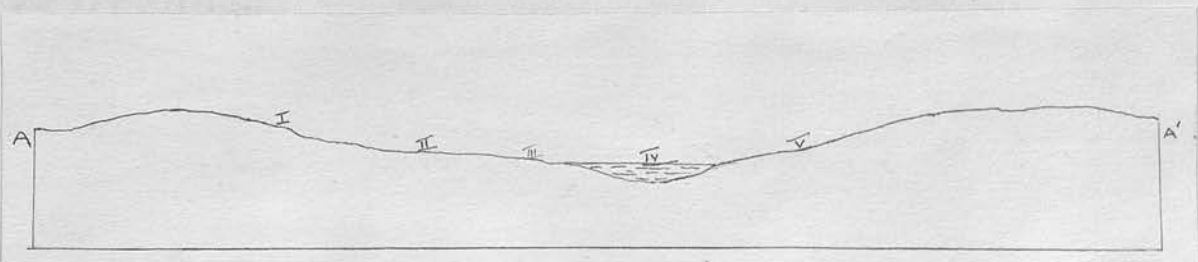


DIAGRAM II. Transect A - A¹ represented diagrammatically in vertical section. The figures indicate approximately the points at which counts were made (17.6.26.).

	I	II	III	IV	V V
<i>Potentilla Anserina</i>			3		
<i>Glaux maritima</i>	1	37	48		
<i>Atriplex patula</i>		18	32		
<i>Rumex crispus</i>	3				
<i>Polygonum aviculare</i>	13				
<i>Triglochin maritimum</i>		8			
<i>Eleocharis palustris</i>					∞
<i>Scirpus maritimus</i>		10	40	∞	
<i>Carex</i> sp.		∞	11		
<i>Agrostis alba</i>	8	3	3		
<i>Arrhenathrum avenaceum</i>					∞

(The sign ∞ indicates a strong development of the species).

The dry, sandy soil towards the seaward side (A) of the transect no doubt accounts for the presence of *Potentilla Anserina*, *Rumex crispus*, *Polygonum aviculare*, *Atriplex patula* and *Agrostis alba* in the first three counts. *Glaux maritima*, *Triglochin maritimum* and *Scirpus maritimus* are the only halophilous species occurring in this transect and the presence of *Eleocharis palustris* with *Arrhenathrum avenaceum* indicates that the percentage of salt in the ground water cannot be large.

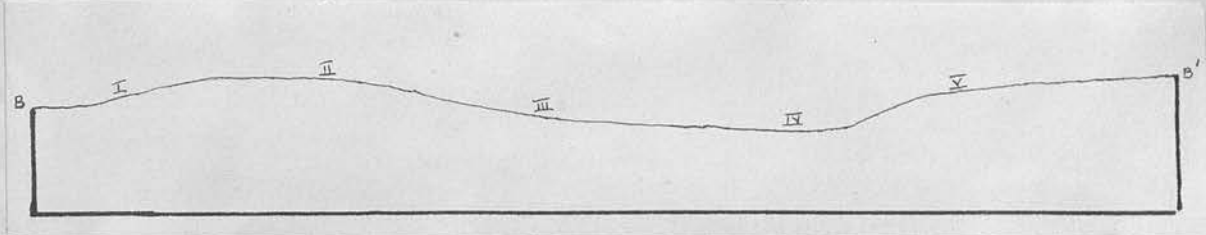


DIAGRAM III. Transect B-B¹ represented diagrammatically in vertical section. The figures show approximately the points at which counts were made (17.6.26.)

	I	II	III	IV	V
<i>Arenaria peploides</i>	∞	∞	∞		
<i>Trifolium repens</i>		∞			
<i>Potentilla Anserina</i>		7		37	27
<i>Bellis perennis</i>		5			
<i>Taraxacum officinale</i>		9			
<i>Plantago major</i>		24			
<i>Plantago lanceolata</i>		2			
<i>Rumex crispus</i>	1	4			
<i>Juncus Gerardi</i>			∞	∞	∞
<i>Eleocharis palustris</i>			∞	∞	∞
<i>Carex flava</i> var. <i>Oederi</i>					6
<i>Agrostis alba</i>				17	∞
<i>Agropyron repens</i>	∞		21		
<i>Lolium perenne</i>		10			
<i>Poa annua</i>		∞			5
<i>Festuca pratensis</i>		∞			

Of the species found in these counts only *Juncus Gerardi* is a true salt marsh inhabitant which again indicates that even though the ground is marshy in places, the amount of salt present is small. There are other non-halophytes present in addition to those found in transect A-A¹, and the area round count No. II, where pasture plants are mixed with shore plants, comprises typical pasture.

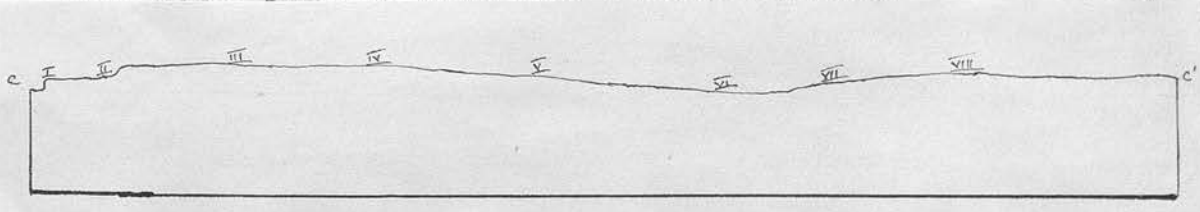


DIAGRAM IV. Transect C-C¹ represented diagrammatically in vertical section. The figures show approximately the points at which counts were made (13.7.24.).

	I	II	III	IV	V	VI	VII	VIII
<i>Caltha palustris</i>							3	
<i>Ranunculus sceleratus</i>							1	
<i>Ranunculus acris</i>							3	
<i>Ranunculus bulbosus</i>								3
<i>Cardamine pratensis</i>							1	
<i>Cerastium viscosum</i>								5
<i>Arenaria peploides</i>	4	2						
<i>Lotus corniculatus</i>								5
<i>Trifolium medium</i>								4
<i>Trifolium repens</i>		8	8	8			2	8
<i>Bellis perennis</i>		12	8					8
<i>Matricaria inodora</i>	2							
<i>Frunella vulgaris</i>								1
<i>Plantago lanceolata</i>			31					1
<i>Atriplex patula</i>	2							
<i>Rumex crispus</i>	1	1						
<i>Juncus conglomeratus</i>							7	
<i>Juncus effusus</i>							8	
<i>Juncus articulatus</i>						8		
<i>Juncus Gerardi</i>				23	8			19
<i>Eleocharis palustris</i>						8	8	
<i>Carex vulpina</i>				8		4	5	
<i>Carex Goodenovii</i>							17	9
<i>Agrostis palustris</i>				8	8	8	8	
<i>Lolium perenne</i>	3		10					
<i>Festuca pratensis</i>		8	8					
<i>Cynosurus cristatus</i>			8					15

In this section the formation of pasture has gone still further and more species have been introduced, while even in the marshy parts the change to conditions free from salinity is more pronounced, e.g., by the presence of *Cardamine pratensis*, *Caltha palustris*,

Juncus effusus and *Juncus conglomeratus*, in addition to *Eleocharis palustris*.

Throughout this area as a whole, therefore, the gradual raising of the surface above that of the original salt marsh, together with the gradual washing-out of salt from the ground by rain, has permitted of the ingress of non-halophilous species. Many of those present are such as are able to tolerate the presence of a certain amount of salt, but in the higher, drier parts species truly characteristic of inland areas occur. It may be considered, therefore, that this salt marsh, although varying in composition from place to place, is passing, as a whole, from a well-developed salt marsh into a typical pasture-land.

Plants of Seaside Rocks. At various points along the coast cliffs and rocks are exposed, and, although often above high tide mark, they are frequently washed by spray, so that the plants growing upon them show halophytic adaptations. The characteristic plants of such habitats are *Armeria vulgaris*, *Plantago maritima* and *Plantago Coronopus*. The island of Inchgarvie, which is included within the county boundary, provides a habitat for such plants and also contains other species. Situated in the Firth of Forth, off South Queensferry, it consists of an intrusive mass of quartz-dolerite. The outer cliffs are steep, especially on the eastern and south-eastern sides and growing in crevices there is *Cheiranthus Cheiri*, a typical plant of rocky islets. The higher parts of the island have been considerably modified by Man, it having served in turn as a prison and as a fortress. These changes have been the means of introducing into the island so many plants from the mainland that the following list of species cannot be considered typical of such a habitat. Plants found on the island on June 4th., 1926, were:- *Cheiranthus Cheiri*, *Cochlearia officinalis*, *Cerastium semidecandrum*, *Lychnis alba*, *Malva sylvestris*, *Cytisus scoparius*, *Medicago lupulina*, *Trifolium arvense*, *Trifolium repens*, *Vicia hirsuta*, *Vicia lathyroides*, *Heracleum Sphondylium*, *Anthriscus sylvestris*, *Matricaria inodora*, *Senecio vulgaris*, *Senecio Jacobaea*, *Sonchus oleraceus*, *Taraxacum officinale*, *Galium verum*, *Veronica Chamaedrys*, *Armeria vulgaris*, *Plantago lanceolata*, *Plantago Coronopus*, *Rumex crispus*, *Rumex Acetosa*, *Urtica dioica*, *Ajra praecox*, *Holcus lanatus*, *Lolium perenne*, *Festuca rubra*, *Festuca pratensis*, *Dactylis glomerata* and *Poa pratensis*. As will be seen from this list not only maritime species are present but also those of woodland, pasture and waste ground.

Sandy Shores and Dunes. Sand occurs at several places along the Dalmeny coast but dune formation is restricted to one small area at Hound Point. In such places an association of strand plants is generally present on stretches of sand above high water mark and in front of the dunes. As there is a certain amount of salt present in the sand and since the plants are liable to be washed by spray, these are to some extent halophytic. The species occurring most frequently are *Arenaria peploides*, *Potentilla Anserina*, *Atriplex patula*, *Atriplex Babingtonii*, *Rumex crispus*, *Polygonum aviculare*, and *Agropyron repens*. It will be observed that these plants are the same as those found in counts made at the seaward side of the Blackness salt marsh, where a narrow strip of sand is present immediately above high water mark.

The Dune Formation at Hound Point consists of accumulations of sand which have been blown up above high tide mark and bound together by vegetation. Towards the sea the dunes are loose and mobile but further inland they are more or less fixed. *Psamma arenaria* is here the principal plant which binds the sand

together

together, and other plants are found associated with it where the sand tends to become fixed. Two transects were taken across the dunes at Hound Point, starting from the sea, and counts were made at intervals of the number of species present in a square yard.

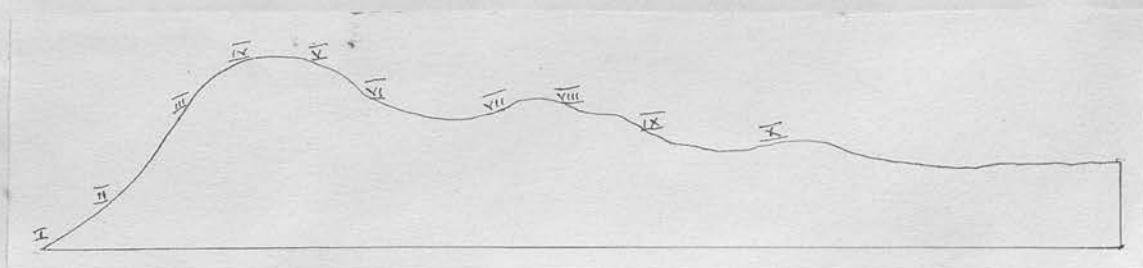


DIAGRAM V. Diagrammatic vertical section across the dunes at Hound Point. The numbers show approximately the points at which counts were made (24.6.26.).

	I	II	III	IV	V	VI	VII	VIII	IX	X
<i>Thalictrum minus</i>					9	∞	∞			24
<i>Viola canina</i>		2								
<i>Trifolium repens</i>							3			
<i>Astragalus danicus</i>						7	3			19
<i>Lotus corniculatus</i>							4			
<i>Rosa spinosissima</i>				3			5	∞		
<i>Heracleum Sphondylium</i>		1	1	2	3	3	3	2		
<i>Achillea millefolium</i>			7	5	∞	21	3	10		
<i>Senecio Jacobaea</i>		1						2		2
<i>Centaurea nigra</i>		4	25	9	1	14	1			3
<i>Taraxacum officinale</i>		2	3	2			1			
<i>Galium verum</i>							2	8		
<i>Veronica Chamaedrys</i>						37				
<i>Plantago lanceolata</i>						40	7			1
<i>Carex arenaria</i>	8	7		2				∞	∞	10
<i>Psamma arenaria</i>	∞	∞	∞	∞	∞					∞
<i>Arrhenathrum avenaceum</i>			∞	∞						
<i>Festuca ovina</i>						∞	∞			
<i>Dactylis glomerata</i>						∞	∞			
<i>Poa annua</i>								∞		

It is obvious from this table that *Psamma arenaria* and *Carex arenaria* are the principal plants on the steep seaward face of the dune and only towards the upper parts of the slope are any other plants present. On the crest of the dune where the sand is more firmly bound together, other characteristic dune species appear such as *Thalictrum minus* and *Rosa spinosissima* and together with these are numerous pasture plants. Counts VIII, IX, and X were taken at points where the sand was looser than on the crest of the dune, consequently there is a reappearance of *Psamma arenaria*.

The second transect was taken immediately to the west of Hound Point where the dune formation is not so pronounced nor the dunes so high.--

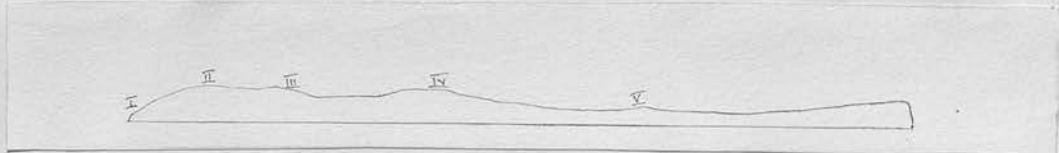


DIAGRAM VI. Diagrammatical vertical section across the dunes to the west of Hound Point. The numbers show approximately the points at which counts were made. (24.6.26.)

	I	II	III	IV	V
<i>Viola canina</i>			3		
<i>Cerastium semidecandrum</i>					8
<i>Rosa spinosissima</i>			8		
<i>Heracleum Sphondylium</i>		2	2		
<i>Senecio Jacobaea</i>			3	2	
<i>Taraxacum officinale</i>			1		
<i>Cnicus arvensis</i>	1	11			
<i>Rumex crispus</i>			1		
<i>Rumex Acetosella</i>					18
<i>Carex arenaria</i>			9	11	3
<i>Psamma arenaria</i>	8	8	8	8	
<i>Agropyron repens</i>			8		8
<i>Festuca ovina</i>					8

In this transect the sand is much looser and the dunes are not so well developed as in the first transect, so that although the vegetation of both transects is essentially similar, here it is more open and there is not the same degree of colonisation by pasture-land plants. Plants which are characteristic of sand

dune

dune formations in general are marked * in these tables. In both cases species occur which are typical of fixed dune associations. These are:- *Cerastium semidecandrum*, *Lotus corniculatus*, *Trifolium repens*, *Rosa spinosissima*, *Galium verum*, *Senecio Jacobaea*, *Taraxacum officinale*, *Carex arenaria* and *Festuca ovina*, and these are present in sufficient quantity as to point towards a tendency to fixation of the dunes. The other species present are mainly chance colonists from the surrounding district which have found here a suitable habitat.

East from Hound Point, between Dalmeny House and Long Green, there is a flat sandy area which has been bound together by *Psamma arenaria* and appears to be progressing towards a fixed dune formation. Plants found here include *Agropyron repens*, *Cnicus lanceolatus*, *Origanum vulgare*, *Senecio Jacobaea*, *Ononis repens*, *Valerianella olitoria*, *Valeriana officinalis*, *Galium Cruciata* and *Potentilla Anserina*.

Still further east, between Long Green and Cramond, fixed dune formations occur which can scarcely be distinguished from ordinary pasture. On the seaward edges, however, *Psamma arenaria* is still present, and further inland sand plants are intermixed with those of pasture. There is also a considerable percentage of woodland species present in this district, the woodland flora extending in places practically to the beach.

II. THE REGION OF CULTIVATION (including permanent pasture) occupies the greatest part of the county. Covering altogether an area of 5,512 acres (1925), it extends southwards from the coast, and, except for woodlands, is interrupted only by a few small areas of hill pasture, and by the moorlands in the south-west. The main factors which determine the limits of cultivation are rainfall, temperature, altitude and exposure. The nature of the substratum, however, must also be taken into account. Thus in the case of the southern moorland other factors are favourable for cultivation, but the presence of large deposits of peat renders the soil unsuitable for cultivation, unless (as has been done in some places) it is drained and the acidity lessened by artificial methods. The soils underlying the present region of cultivation are very fertile and have arisen for the most part from boulder clay and fresh-water alluvium.

As already stated, the cultivated area can be divided into two regions, (a) with wheat, and (b) without wheat. Linlithgowshire, with the other Lothians, is famous as a wheat-growing county, but being the most westerly of the three counties, it comes nearest to the limit of profitable wheat cultivation, owing chiefly to the increasing rainfall. Where the annual rainfall exceeds 32-34 inches, and the average July temperature is less than 56°F., wheat ceases to be a regular crop, nor is it generally grown above an altitude of 500 ft. on northern slopes or 700 ft. on southern slopes. When the interactions of these factors are considered, one finds at Bangour, for instance, that the low rainfall is counteracted by high altitude and low July temperature, while at Linlithgow low altitude and high temperature minimise the effect of a slightly higher rainfall, and the wheat line consequently passes north of Bangour but includes Linlithgow. The possibility of wheat cultivation can thus be calculated for different places. The total area under wheat in 1925 was 2035 acres. From the coast the wheat region extends up the Almond to Livingstone. The limiting line from there runs north to Ochiltree where it turns west, passing about two miles south of Linlithgow, and cultivation ceases in the Avon valley in the neighbourhood of Torphichen. Although the 500 ft. contour line extends south to Bathgate, no wheat has been observed in this district and its absence is probably due to excessive rainfall and low temperature.

In the cultivated areas where wheat is not grown, the chief crop, leaving permanent pasture out of consideration, is oats.

Throughout the entire region of cultivation, little remains of the original flora and many alien plants have been introduced with the crops. Since this district was once occupied by primitive woodland, the natural plants of the district were woodland plants. The clearing away of the original woods necessarily involved the disappearance of this flora and such woods as were later created artificially, are peopled by the plants of meadow and pasture and the aliens of agricultural land rather than by purely woodland types. In all Linlithgowshire, only at Kinneil Wood does there remain a small patch of natural oakwood from which some indication of the nature of the original woodland flora may be derived. Kinneil Wood, near Bo'ness, covering an area of approximately one square mile, grows on boulder clay which overlies limestones and coal measures of the Carboniferous series. Slightly less than half of the area is now occupied by natural woodland, and, of the remaining part from which the original trees have been removed, one third still remains unplanted, one third has been planted with coniferous trees, and one third planted with a mixture of deciduous and coniferous trees with which are intermixed a few of the original oaks.

*

In the natural woodland the principal tree is *Quercus pedunculata* and the next in order of frequency *Ulmus glabra*. *Betula alba* and *Pinus sylvestris* occur ~~in~~ less frequently in approximately equal proportions. *Acer Pseudoplatanus*, *Pyrus Aucuparia* and *Crataegus monogyna*, again in practically equal proportions, are still less frequent. There is no shrub layer although most of the specimens of *Pyrus Aucuparia* and *Crataegus monogyna* are little more than large shrubs. Counts of the ground vegetation were made in parts of the wood as far removed from paths as possible, and these gave the following numbers of species per square yard (15.5.26.).

	I	II	III
<i>Anemone nemorosa</i>		2	
<i>Lychnis diurna</i>		24	3
<i>Oxalis Acetosella</i>	8	8	6
<i>Digitalis purpurea</i>	1		
<i>Betula alba</i> (seedling)	1		
<i>Scilla nutans</i>	4	2	8
<i>Anthoxanthum odoratum</i>	6		
<i>Holcus lanatus</i>	1	8	
<i>Pteris aquilina</i>	18	14	5
<i>Aspidium Filix-mas</i>			1

The fourth count made in the wood was taken near a path and the species occurring in one square yard were:-

<i>Ranunculus Ficaria</i>	8
<i>Stellaria media</i>	1
<i>Oxalis Acetosella</i>	8
<i>Asperula odorata</i>	8
<i>Urtica dioica</i>	4
<i>Scilla nutans</i>	9
<i>Holcus lanatus</i>	7

In all the above lists the species marked x are given

in

in Tansley's "Types of British Vegetation" as occurring in typical *Quercetum Robur*, the damp oakwood of clays and loams which has been recognised as a definite plant association in England. Since, of the twenty species named above, thirteen are accepted species of this formation, it would appear that this section of Kinneil Wood represents a small area of primitive damp oakwood.

Where the trees had been cut down and no replanting had taken place, *Scilla nutans* was the commonest species and there were also present *Stellaria Holostea*, *Potentilla erecta*, *Rubus fruticosus*, *Galium saxatile*, *Festuca ovina* and *Pteris aquilina*, five out of these seven species being given in Tansley's list of plants of damp oakwood. The presence of *Scilla nutans*, *Stellaria Holostea*, *Potentilla erecta* and *Pteris aquilina* indicates that such a tree association originally existed here, but through time the *Scilla*, and probably the *Stellaria* and *Pteris*, will tend to disappear if the ground remains unplanted. *Rubus* spp. are said to appear in degenerate oakwood so that the presence here of *Rubus fruticosus* seems to indicate that this area is gradually degenerating. Moreover *Potentilla erecta* and *Festuca duriuscula* are mentioned by Tansley as occurring in the neutral grassland into which such oakwoods generally pass. The presence in addition to these of *Galium saxatile*, which is really a species of dry grassland moor, is probably due to the fact that the soil here having been derived from boulder clay, is somewhat acid. This may also account for the relatively large percentage of *Festuca ovina*.

In that part of the wood which still contains a few oaks but has been largely replanted with a mixture of young deciduous and coniferous trees, the original ground flora still lingers, consisting principally of *Scilla nutans*, *Anemone nemorosa* and *Pteris aquilina*, with *Ranunculus Ficaria* present towards the edges of the plantation, and intermixed with *Oxalis Acetosella*.

Where the new plantation consists entirely of conifers, little of the original ground vegetation remains except towards the margin of the wood, where the plants present are the same as those given above for the mixed plantation. In the centre of the plantation the shade is so great as to exclude all ground flora over the greater area with the exception of occasional plants of *Pteris aquilina*, *Aspidium Filix-mas* and *Aspidium dilatatum*.

Kinneil Wood, therefore, serves as an excellent illustration of the process which has destroyed the natural woodland flora of the district, and shows the successive stages of this in the area of natural oakwood, the area without trees, and areas replanted with deciduous and coniferous species. It is unfortunate that there is no similar fragment remaining of the primitive birch and pine woods which are supposed to have occupied the higher-lying districts of the county.

In all planted woods (and those of appreciable size number about 45), there is a large amount of variation. This depends greatly on the type of trees which have been planted. The deciduous plantations exceed those of coniferous trees and occur all over the county but principally within the region of wheat cultivation. This area also contains a considerable number of mixed plantations. The wholly coniferous woods, which are only seven or eight in number, are found in the neighbourhood of

the limit of wheat cultivation or beyond it. The nature of the ground flora in any particular plantation depends chiefly on the plants which occupied that area before planting took place, and on the nature of the surrounding flora which may gain a footing in the plantation. Where more than one species of tree is present, it also varies from place to place according to the nature of the tree-layer overhead.

When all these factors are considered, it will be seen that no uniform or characteristic ground flora can exist for such woods. Some species, however, are fairly common, mostly those preferring a shady habitat. The main difference between the ground flora of a mixed coniferous wood and that of a mixed deciduous wood is due to the fact that the coniferous trees usually form a denser growth and do not allow of the penetration of so much light. The vegetation is, therefore, sparser than in deciduous woods and is often restricted to ferns as in the case of the coniferous plantation at Kinneil.

Ross's Wood, near Kirkliston, is a mixed plantation containing principally deciduous trees, with some conifers. The deciduous trees in order of frequency are:-

<i>Quercus pedunculata</i>	
<i>Acer Pseudoplatanus</i>	
<i>Crataegus monogyna</i>	
<i>Pyrus Aucuparia</i>	
<i>Salix</i> spp.)
<i>Tilia europaea</i>)
<i>Fagus sylvatica</i>) Scarce.
<i>Castanea sativa</i>)
<i>Aesculus Hippocastanum</i>)

Pinus sylvestris is the principal conifer, with a few firs and spruces. *Sambucus nigra* is dominant in the shrub layer, with occasional specimens of *Ilex Aquifolium*. The following square yard counts, which were taken at random in different parts of the wood, will serve to show the variation in the ground flora from place to place. (9.6.26.)

trees:-

OVER/

UNDER TREES:-

UNDER TREES:-	Acer Pseudoplatanus, Pinus sylvestris and Sambucus nigra.	Tilia europaea and Pinus sylvestris.	Quercus pedunculata and Sambucus nigra.	Sambucus nigra.	Acer Pseudoplatanus Quercus pedunculata and Sambucus nigra.	Quercus pedunculata and Sambucus nigra.	Young Acer Pseudoplatanus.
<i>Lychnis dioica</i>				21	5	7	2
<i>Acer Pseudoplatanus (seedling).</i>					3		6
<i>Hieracium Sphondylium</i>	1						
<i>Lonicera Periclymenum</i>	5				1		
<i>Sambucus nigra. (seedling).</i>							
<i>Urtica dioica</i>	19			5	4	1	4
<i>Holcus lanatus</i>	8					8	
<i>Aspidium dilatatatum</i>		1			1		
<i>Aspidium Filix-mas</i>					1		2
<i>Moss</i>		8					
<i>Pellia sp.</i>				8			

With

With the exception of *Urtica dioica* and *Lychnis dioica* the species do not occur uniformly, and these results are quite typical of counts made in artificial plantations. From general observations, the following list has been drawn up of the plants most frequently present in these woods where they appear to find a suitable habitat:-

<i>Ranunculus Ficaria</i>	<i>Hedera Helix</i>
<i>auricomus</i>	<i>Lonicera Periclymenum</i>
<i>repens</i>	<i>Campanula latifolia</i>
<i>Viola Riviniana</i>	<i>Symphytum tuberosum</i>
<i>Lychnis dioica</i>	<i>Digitalis purpurea</i>
<i>Arenaria trinervia</i>	<i>Nepeta hederacea</i>
<i>Stellaria nemorum</i>	<i>Stachys sylvatica</i>
<i>Holostea</i>	<i>Teucrium Scorodonia</i>
<i>Geranium Robertianum</i>	<i>Mercurialis perennis</i>
<i>Oxalis Acetosella</i>	<i>Urtica dioica</i>
<i>Spiraea Ulmaria</i>	<i>Allium ursinum</i>
<i>Geum urbanum</i>	<i>Holcus mollis</i>
<i>rivale</i>	<i>lanatus</i>
<i>rivale</i> x <i>urbanum</i>	<i>Brachypodium sylvaticum</i>
<i>Rubus fruticosus</i>	<i>Dactylis glomerata</i>
<i>Fragaria vesca</i>	<i>Poa nemoralis</i>
<i>Rosa spp.</i>	<i>Polypodium vulgare</i>
<i>Epilobium montanum</i>	<i>Aspidium Filix-mas</i>
<i>Sanicula europaea</i>	<i>dilatatum</i>
<i>Angelica silvestris</i>	<i>Pteris aquilina</i>

Vegetation of the River Valleys: The Alder-willow association, which constitutes the primitive flora of such areas, is not now present in West Lothian, but *Salix* spp. are quite common in this habitat. Since the rivers flow through agricultural country, the flora of the surrounding valleys has suffered in a way similar to that of the primitive woods and is now largely artificial in character.

Almond Valley. Throughout its upper reaches and as far down as Carlowrie, the Almond flows through the fertile agricultural plain which has been formed largely from the deposits of fresh water alluvium along its banks. This deposit is comparatively recent (usually overlying the boulder clay) and has no definite tree formation beyond the single row of willows which is present at many places, the usual species being *S. viminalis*, *S. alba*, *S. fragilis* and *S. cinerea*. The land is very often cultivated almost to the water's edge but occasionally there is a small strip of damp meadow between the willows and the tilled fields, and the plants found in this habitat include:-

<i>Ranunculus repens</i>	<i>Rhinanthus Crista-galli</i>
<i>Barbarea vulgaris</i>	<i>Veronica Chamaedrys</i>
<i>Cardamine pratensis</i>	<i>Mentha</i> spp.
<i>Geranium pratense</i>	<i>Stachys palustris</i>
<i>Saxifraga granulata</i>	<i>sylvatica</i>
<i>Geum rivale</i>	<i>Lamium album</i>
<i>Galium Cruciata</i>	<i>Galeopsis Tetrahit</i>
<i>Scabiosa arvensis</i>	<i>Urtica dioica</i>
<i>Tussilago Petasites</i>	<i>Orchis maculata</i>
<i>Chrysanthemum Leucanthemum</i>	<i>Holcus lanatus</i>
<i>Cnicus arvensis</i>	<i>Aira caespitosa</i>
<i>Symphytum officinale</i>	<i>Poa trivialis</i>
<i>Scrophularia nodosa</i>	

From Craigiehall onwards to the mouth of the river, the banks are much steeper and in some parts rocky, and on either side there is a wooded area. *Salix* spp. are still present but in addition there are many other trees including *Quercus pedunculata*. *Fagus sylvatica*, *Prunus Avium*, etc., and various shrubs, such as *Taxus baccata*, *Syringa vulgaris* and *Ligustrum vulgare*. Among the ground plants of this riverside wood are:-

<i>Anemone nemorosa</i>	<i>Campanula latifolia</i>
<i>Ranunculus Ficaria</i>	<i>Scrophularia nodosa</i>
<i>Barbarea vulgaris</i>	<i>aquatica</i>
<i>Cardamine pratensis</i>	<i>Samolium tuberosum</i>
<i>Viola Riviniana</i>	<i>Nepeta hederacea</i>
<i>Lychnis dioica</i>	<i>Lamium album</i>
<i>alba</i>	<i>purpureum</i>
<i>Arenaria trinervia</i>	<i>Mercurialis perennis</i>
<i>Stellaria Holostea</i>	<i>Scilla nutans</i>
<i>Oxalis Acetosella</i>	<i>Allium Ursinum</i>
<i>Geum rivale</i>	<i>Luzula sylvatica</i>
<i>Rubus Idaeus</i>	<i>Carex remota</i>
<i>Saxifraga granulata</i>	<i>Arrhenatherum avenaceum</i>
<i>Chrysosplenium oppositifolium</i>	<i>Aira caespitosa</i>
<i>Angelica sylvestris</i>	<i>Brachypodium sylvaticum</i>
<i>Heracleum Sphondylium</i>	<i>Poa nemoralis</i>
<i>Conopodium denudatum</i>	<i>Aspidium Filix-mas</i>
<i>Tussilago Petasites</i>	<i>Cystopteris fragilis</i>
<i>Doronicum Pardalianches</i>	

This list shows that the ground flora is composed of a mixture of species, some of which belong to woodland and some to damp riverside meadow. Probably the planting of additional trees and shrubs beyond the original woodland area has led to a gradual intermixing of the species.

Avon Valley. The Avon, like the Almond has large deposits of freshwater alluvium along its banks. In this case, however, the bank on one side is usually steep and rocky, exposing the limestones and sandstones of the carboniferous series, while on the other side there is the flat alluvial terrace. This terrace is found alternately on opposite sides of the river, and, consequently, there is no continuous flat stretch of cultivated fields as along the banks of the Almond. It is more usual to find that the intervening patches of alluvium between successive rocky outcrops form wet meadow rather than cultivated areas, while the rock banks themselves are generally wooded. Such is the case in Carribber Glen, near Linlithgow, where the steep rocky banks are occupied by a mixed deciduous wood. The flora is principally composed of woodland species and a few rare plants are to be found here. The following list comprises most of the species present:-

Ranunculus auricomus

Ranunculus auricomus	Doronicum Pardalianches
Trollius europaeus	Valeriana officinalis
Arabis Thaliana	Asperula odorata
Draba verna	Symphytum tuberosum
Viola Riviniana	Primula vulgaris
Lychnis dioica	Ajuga reptans
Stellaria Holostea	Mercurialis perennis
Hypericum perforatum	Scilla nutans
Geranium sylvaticum	Luzula sylvatica
lucidum	Anthoxanthum odoratum
Oxalis Acetosella	Dactylis glomerata
Cytisus Scoparius	Brachypodium sylvaticum
Vicia sepium	Poa nemoralis
Prunus Padus	Melica nutans
Avium	Melica uniflora
Geum urbanum	Equisetum sylvaticum
Rosa spp.	Aspidium Filix-mas
Sanicula europaea	Aspidium dilatatum
Myrtilis Odorata	Cystopteris fragilis
Conopodium denudatum	
Asplenium ad-nigrum	

The plants present in this wood are, as a whole, a more definite woodland series than those found at Craigiehall, and although a certain amount of planting and introduction of new species has taken place, the presence of these decidedly woodland species appears to point to the likelihood of there being here the altered remains of a patch of primitive woodland.

On the banks of the Avon just above Carrubber Glen, there is a patch of alluvium forming wet meadowland and the species found there include:-

Ranunculus Flammula	Salix repens
Caltha palustris	Habenaria chlorantha
Cardamine pratensis	Orchis maculata
Polygala vulgaris	Luzula campestris
Tussilago Petasites	Scirpus setaceus
Veronica officinalis	Carex diversicolor
Pedicularis sylvatica	Carex pallescens
Rhinanthus Crista-galli	

Vegetation of Inland Lochs. Linlithgow Loch is the only extensive sheet of inland water in the county, and is surrounded by cultivated land and pasture. The plants found in the loch and around its margin include:-

Ranunculus aquatilis	Myriophyllum spicatum
(various forms)	
Nuphar luteum	alterniflorum
Nasturtium palustre	Polygonum amphibium
Subularia aquatica	Hydropiper
Ceratophyllum demersum	Potamogeton pectinatus
submersum	filiformis
Stratiotes Aloides	Digraphis arundinacea
Alisma Plantago-aquatica	

III. Regions

III. Regions of Moorland and Hill Pasture occur in the south-western parts of the county on the slopes of the Bathgate Hills and on the upland plateaux where the soil is peaty. There are two distinct moorland formations in this district, the Heather-moor association, and the Eriophorum or Moss-moor association.

The former occurs on some of the hill-slopes between Bathgate and Linlithgow, at an altitude of about 700 feet. The rocks there are chiefly basalt lavas with some intrusive masses of quartz-dolerite and occasional limestone beds, while overlying the greater part of these rocks is a layer of boulder clay. The area covered by the heather-moor is comparatively small, but it is present on the lower slopes of Knock Hill and on the greater part of Cairnpapple Hill which was once covered by a mixed coniferous plantation, now felled. The soil underlying the formation is moderately wet and contains a certain amount of peat. Counts were made at different places of the numbers of species present in a square yard and these gave the following results:- (25.5.26.).

	I	II	III	IV
<i>Anemone nemorosa</i>	2			
<i>Potentilla erecta</i>	2			1
<i>Pyrus Aucuparia</i> (seedling).				1
<i>Galium saxatile</i>				3
<i>Calluna vulgaris</i>	9	17	1	7
<i>Vaccinium Myrtillus</i>	16	8	7	5
<i>Luzula campestris</i>	1			4
<i>Nardus stricta</i>		8	8	8
<i>Festuca ovina</i>	8			
<i>Aspidium dilatatum</i>				1

All of these except *Anemone nemorosa* are characteristic plants of the heather-moor, and the presence of *Anemone* is probably accounted for by the fact that this area was recently occupied by woodland. Since the soil is suitable for the formation of heather-moor, however, the woodland species have been rapidly replaced, and the general tendency appears to have been towards the development of this type of moorland.

The Eriophorum or Moss-Moor covers a much larger area in the extreme west of the county, occurring on Blawhorn Moss, Polkemmet Moor, Fouldhouse Moor and several smaller areas, usually at an altitude of 700-800 feet. Wherever it is present there is a deep layer of peat, and the soil is very wet. The following square-yard counts were made on Blawhorn Moss and Polkemmet Moor, showing the numbers of species present in a square yard:-

Potentilla erecta

	I	II	III	IV	V	VI	VII	VIII	I	II	III	IV
<i>Potentilla erecta</i>							1	1				
<i>Erica Tetralix</i>	1	2				1	7	13	2		2	
<i>Calluna vulgaris</i>	8		1	6					8		8	
<i>Narthecium ossifragum</i>						8	3	11				
<i>Eriophorum vaginatum</i>	8	8	8	8	8	8	8	8	26	5	8	1
<i>Eriophorum polystachion</i>											8	3
<i>Scirpus caespitosus</i>					8							8
<i>Ajra flexuosa</i>	8	8	8						8	8	8	
<i>Scirpus caespitosa</i>												8
<i>Nardus stricta</i>								4				
<i>Festuca ovina</i>												8
<i>Aspidium dilatatum</i>									1			
<i>Sphagnum</i> sp.				8	8	8		1				

These counts show that *Eriophorum vaginatum* is the principal plant of the Association, and usually there are present with it *Calluna vulgaris*, *Erica Tetralix*, and *Ajra flexuosa*. *Scirpus caespitosus*, *Narthecium ossifragum* and *Sphagnum* are only locally abundant, whilst *Potentilla erecta*, *Eriophorum polystachion*, *Nardus stricta* and *Aspidium dilatatum* are comparatively scarce. The formation as a whole is exceedingly uniform and shows but little variation over large areas.

Hill Pasture occurs in the moorland districts and in some places in the Bathgate-Hills, at altitudes of from 600 to 900 feet. The soil underlying it is not so wet as that of the moorland, nor does it contain so much peat, and it is considerably richer in mineral salts. Grasses are the chief constituents of this association and with them are a number of pasture plants. Rushes and sedges are present in the wetter places. The following counts were made in different areas of hill pasture:-

✱

Ranunculus repens

BLACKRIDGE
5.7.26.

ARMADALE
22.6.26.

FAULHOUSE
22.6.26.

COCKLEO
25.5.2

	I II		I II III IV				I II		I II	
x Ranunculus repens		8	1		1			2		
x Trifolium repens							8			
x Potentilla erecta			11			19	8		1	
x Achillea Ptarmica		8								
x Galium saxatile			8	9	8		4		8	
x verum		8								
x Rumex Acetosa	6	4	4		4					
Juncus conglomeratus	5			4		3				
x squarrosus	1					8		5		
x Luzula campestris				6				3		
x Carex ovalis	10									
x panicea				7						
x Anthoxanthum odoratum	22		8		8		8	16	4	
Phleum pratense										8
x Agrostis palustris			8	8	8					
x Aira flexuosa		8								
caespitosa							8			
praecox										8
x Nardus stricta	8	1		8		8	8	8	8	
x Festuca ovina				8		8	8		8	8

The plants marked x are all characteristic species of grassland moor or hill pasture especially of the drier formation or Nardetum strictae, and grasses easily predominate, the other species being a mixture of those characteristic of pasture-land and of dry peat. Juncus conglomeratus is only present in the wetter hollows and is by no means regular in its occurrence.

In some places the moorland association and the hill pasture association seem to be mixed. This is found to be the case in places where the soil is wet and peaty and yet is not so acid as that of typical moorland, but contains a certain amount of mineral salts. Counts were made in such places, with the following results:-

Ranunculus repens

	I	II	III	I
<i>Ranunculus repens</i>		31		
<i>Ulex europaeus</i>	1			
<i>Potentilla erecta</i>	20	4	1	
<i>Galium saxatile</i>	12			
<i>Taraxacum officinale</i>		2		
<i>Achillea Ptarmica</i>		17		
<i>millefolium</i>	3			
<i>Hypochaeris radicata</i>	4			
<i>Scabiosa succisa</i>			2	
<i>Calluna vulgaris</i>	14	4		7
<i>Rumex Acetosella</i>	1			
<i>Narthecium ossifragum</i>				∞
<i>Juncus conglomeratus</i>		11	3	
<i>Luzula campestris</i>	30	12	4	
<i>Eriophorum vaginatum</i>				8
<i>Carex fusca</i>		41	21	
<i>Alopecurus pratensis</i>		47		
<i>geniculatus</i>	∞			
<i>Nardus stricta</i>			∞	∞
<i>Festuca ovina</i>				∞
<i>Sphagnum</i> sp.			1	∞

Of these, *Potentilla erecta*, *Galium saxatile*, *Nardus stricta*, *Festuca ovina*, and *Juncus conglomeratus* are common both to moorland and hill-pasture. *Calluna vulgaris*, *Narthecium ossifragum*, *Luzula campestris*, *Eriophorum vaginatum*, and *Sphagnum* spp. are characteristic moorland plants, while the remaining species in the list are those commonly met with in hill-pasture. The mixed association does not cover an

extensive

extensive area but is found rather on the outskirts of the Eriophorum moors, and in small patches lying between these and the hill pastures.

General Distribution of Types of Vegetation.

The accumulated observations on the various types of vegetation which have been distinguished, are collected and embodied in the accompanying map on which the various zones are shown in colour. Since the delimitations and extent of each zone in turn has already been somewhat fully discussed with reference to the cognate physical and climatic features, no further elaboration is required here.

With a view to placing on record the present botanical composition of these areas in a way definite enough to provide a means of checking possible future changes, the method of working along certain straight lines was adopted, as has already been mentioned. The lines worked on were so selected as to pass through as great a range of vegetative variation as possible and to be easily referable to outstanding land marks. As shown on the map, two such cross-county transects were made, both starting from points in the southern boundary and extending northward. The first starts near Fauldhouse and passes through Armadale to Wallace's Cave on the banks of the Avon; the second from a point near Addiewell and passing over Knock, Cairnpapple and Cockleroi of the Bathgate Hills and through Linlithgow, skirting Linlithgow Loch reaches the coast at Borrowstounness (Bo'ness).

All the types of vegetation that have been defined, excepting only the littoral types, are represented on one or other of these lines. Similar transects through the eastern part of the county would pass entirely through the cultivated area and for this reason were not made. The littoral formations are not included in this more general method of survey, the strip occupied by them being too narrow for representation in this way. They have

already

already been dealt with in more detail and the transects mapped separately earlier in the paper. Apart from them, Kinneil Wood, and various lochs, the moorland and hill-pasture associations constitute the main natural formations of the county.

These cross-county transects are illustrated below as diagrammatic vertical sections in order to give a ready idea of the nature of the ground transversed. The types of vegetation encountered in turn are indicated.

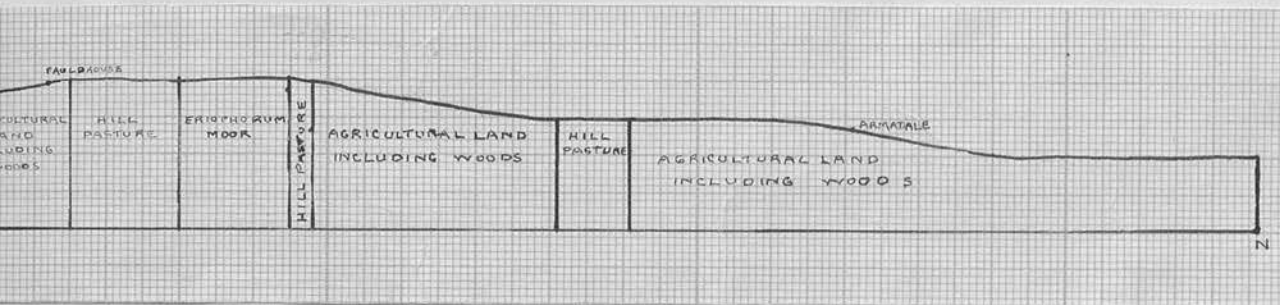


DIAGRAM VII. Vertical Section from Fauldhouse to Wallace's Cave. Horizontal Scale: 1 cm. = $\frac{1}{2}$ mile. Vertical Scale: 1 cm. = 400 feet.

With the exception of the plateau north of Fauldhouse and a small area of hill-pasture south of Armadale, this region is entirely agricultural land. The ground does not slope greatly and drainage is not good. A large deposit of peat, several feet in depth underlies the Eriophorum moor, and this is also present (although not so deep) in the areas of hill-pasture. The Eriophorum moor occupies the wettest parts in the transect; hill-pasture is present where the ground is somewhat drier, and the gently-sloping, better-drained areas are under cultivation.

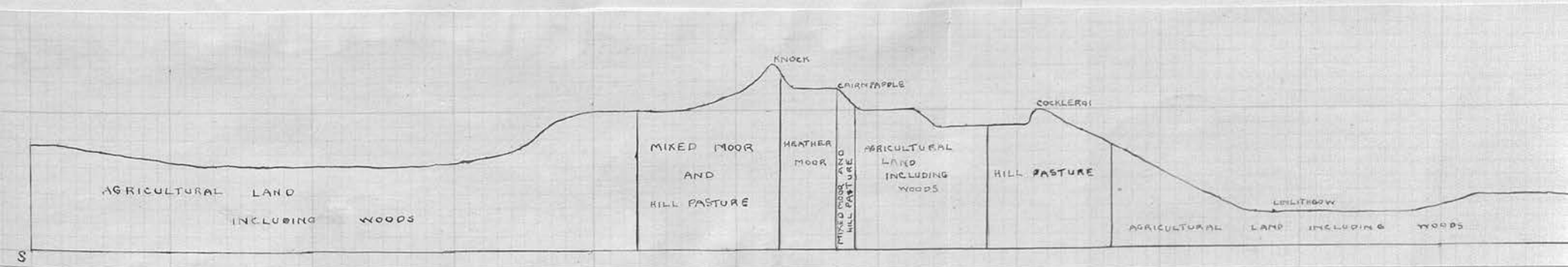


DIAGRAM VIII. Vertical Section from Addiewell to Bo'ness. Horizontal Scale: 1 in. = 1 mile. Vertical Scale 1 in. = 800 ft.

Here the ground slopes more than was the case in the previous transect and it is consequently better drained. There is a thin layer of peat present in some of the wetter parts among the hills, but in no place is there sufficient moisture or is the peat deep enough to render the ground suitable for the growth of *Eriophorum* moor. On the lower slopes of Knock and on Cairnpapple Hill the soil is not exceedingly wet and there is sufficient peat present to bring about the formation of heather moorland. On Cockleroi, to the right of this, there is a typical hill-pasture formation of *Nardetum strictae*, and on the Bathgate Hills, south of Knock, there is a mixture of moorland and hill pasture. All the low-lying country and a part of the hill area which is well-drained and free from peat, have been converted into agricultural land.

Aliens When the flora of the county is considered as a whole it is at once apparent that the region of moorland and hill-pasture is the least affected by the influence of Man. The greater part of the district, including the whole of the agricultural area, has been botanically so altered as to bear but little resemblance to its original state. Many plants, at one time of frequent or even common occurrence, have now entirely disappeared, and others have become very rare. On the other hand, alien species have been introduced and are well-established in some places. There are many possible ways in which such plants may have reached their present habitats. Some have been introduced as crops, or as weeds accompanying crops, and are now found growing in hedgebanks and along the margins of cultivated fields. Such are *Ranunculus arvensis*, *Brassica Napa*, *Brassica Rutarabaga*, *Brassica nigra*, *Brassica Rapa*, *Brassica alba*, *Raphanus Raphanistrum*, *Linum usitatissimum*, *Medicago sativa*, *Trifolium incarnatum*, *Trifolium arvense*, *Trifolium hybridum*, *Vicia sativa*, *Matricaria discoidea*, *Centaurea Cyanus*, *Mentha spicata*, *Mentha piperita*, *Lamium maculatum*, *Allium carinatum*, *Avena fatua*, *Cynosurus echinatus*, *Bromus secalinus*, and *Lolium italicum*. Others, which are particularly plentiful near the sea coast, have been brought by ships in cargoes or in ballast. As might be expected, since trade in this part of the country is principally with European ports, these are chiefly European species. Plants

which

which have thus been introduced include *Papaver somniferum*, *Arabis Turrita*, *Erysimum orientale*, *Pepidium latifolium*, *Reseda alba*, *Dianthus caesius*, *Melilotus alba*, *Melilotus officinalis*, *Onobrychis viciaefolia*, and *Chemopodium hybridum*. Again, in the wake of inland trade, many aliens are found growing in such places as railway embankments and sidings and along the towpath of the Union Canal. Plants found in such habitats are *Epimedium alpinum*, *Papaver somniferum*, *Bunias orientalis*, *Sisymbrium Loeselii*, *Reseda alba*, *Melilotus indica*, *Trigonella lamosa*, *Tragopogon porrifolius*, and *Echinosperrum lappula*. Finally there are those which have escaped from gardens or have been deliberately planted in a wild habitat of which they are not native. This group contains the greatest number of species and has the widest range of geographical origin. It contains many pot-herbs which were originally introduced into the gardens of old castles and monasteries, now in ruins, or entirely destroyed. These aliens are found principally in woods and especially near habitations, such as at Carlowrie, Craigiehall, Hopetoun and Dalmeny. Typical examples are:- *Ranunculus monspeliacus*, *Aconitum Napellus*, *Mecanopsis cambrica*, *Iberis amara*, *Saponaria officinalis*, *Tilia europaea*, *Euonymus latifolius*, *Acer Pseudoplatanus*, *Acer campestre*, *Coronilla varia*, *Rosa alpina*, *Saxifraga umbrosa*, *Ribes* spp., *Astrantia major*, *Aegopodium Podagraria*, *Cornus sanguinea*, *Valeriana pyrenaica*, *Chrysanthemum macrophyllum*, *Petasites fragrans*, *Petasites albus*, *Doronicum Pardalianches*, *Syringa vulgaris*, *Pulmonaria officinalis*, *Linaria Cymbalaria*, *Marrubium vulgare*, *Lamium Galeobdolon*, *Ballota nigra*, *Chemopodium Bonus-Henricus*, *Humulus Lupulus*, *Castanea sativa*, *Polygonatum multiflorum*, *Convallaria majalis*, *Tulipa sylvestris*, *Acorus Calamus*, and there are many others. Very few aliens are found in the southern and south-western parts of the county where the influence of Man has not been so great, and practically all the records are from the agricultural area, including woodlands, and from the sea-coast.

Comparison with Neighbouring Counties. In comparison with the neighbouring counties of Midlothian, Stirlingshire and Lanarkshire, West Lothian is not only much smaller in area than any of these, but also shows much less variation topographically, and consequently its flora does not have so wide a range of form. Of the species recorded for these counties which are not present in West Lothian, it is found that, apart from the aliens, these are principally plants of hills and upland moors. Among them are *Cochlearia alpina*, *Silene acaulis*, *Potentilla Sibbaldi*, *Drosera rotundifolia*, *Saxifraga hypnoides*, *Vaccinium Vitis-idaea*, *Oxyria digyna*, *Salix herbacea*, *Poa alpina*, *Selaginella selaginoides*, and *Lycopodium alpinum*. The *Eriophorum* moors of the Fauldhouse district extend into Lanarkshire where they cover considerable areas, and this association also occurs in the counties of Stirling and Midlothian. The percentage of land under wheat cultivation is less in Lanarkshire and Stirlingshire, but otherwise the flora of the agricultural area is practically the same in all cases. It is not possible to make any comparison of the coastal flora with that of the three above-mentioned counties, and although salt-marsh and sand-dune formations are both present in East Lothian, these cover a larger area and are much better developed than in West Lothian. When the alien plants are considered, however, it is found that those present toward the coast of Linlithgowshire are

more

more or less similar to those growing in the neighbourhood of Grangemouth or of Leith. In all cases introduction has probably been by means of cargoes and ballast and since all these ports have the same type of foreign trade, all the species introduced have a similar origin.

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II. PLANT RECORDS

In the list which follows the previous records of plant species and their localities in West Lothian have been collected from all available sources and coordinated; when possible these records have been verified and new records made in 1924-26 have been added. The nomenclature adopted follows that of the London Catalogue of British Plants, 11th Edition, except in the genus *Rubus* and certain species of *Hieracium*. In these cases the nomenclature used is that of Bentham and Hooker's British Flora, 7th Edition. In the old records cited the names of the authorities are given and the localities, when mentioned, are quoted. Such of the old records as have been personally verified are marked thus ! and new records personally made are similarly distinguished. Where personal verification of an old record is not shown, it does not necessarily follow that such record is not now valid, though it is feared in many cases the plant colony then existing has since died out. Only in certain special cases is it possible to say definitely that this is so, e.g., *Nymphaea alba*, recorded from Dundas pond and not now represented there. In this case, the easily-surveyed locality lends certainty to a negative decision, but in other cases similarly definite negative findings entail prolonged and methodical searching.

The localities quoted from old records are given exactly in the terms in which they appear there, though this policy has given rise to some difficulties and tends to give a flattering and false impression of the number of botanically interesting localities in the county. This is due to the variation in the methods adopted in old records of recording the localities. Certain cases provide the clue to this variation. Thus *Coronilla varia* is variously recorded from Dalmeny, Carlowrie and Kirkliston, whereas it is actually confined to one locality, Carlowrie, midway between Dalmeny and Kirkliston. It appears probable that in some cases at least the plants found in the course of an excursion were recorded under the name of the starting point of the expedition. Sometimes opinions differed about the relative proximity of the locality to the villages on either side of it and both names appear in consequence. Occasionally motives of concealment and protection to rare plants may have led to deliberate vagueness on the description of the locality. In such cases when the actual locality has been visited and old records confirmed, the verification is appended to one place-name only, the one which is deemed to define most accurately the locality in question. In the case of common plants, e.g., *Bellis perennis*, it is not possible to quote an exhaustive list of localities, and only those localities of which definite records have been noted are given. Aliens to the county are marked thus x. The following abbreviations are used:-

- T. J.W.H.Trail in "Topographical Botany of the River basins Forth and Tweed in Scotland," Trans. Bot. Soc. Edin., Vol.XXII (1903), pp.277-308. Also in "Additions and Corrections to the Topographical Botany of Scotland," Ann. Scot. Nat. Hist., 1905, 1906, 1908, 1909.

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- I.B.B. Isaac Bayley Balfour in "Localities for plants near Edinburgh," Trans. Bot. Soc. Edin. Vol.xi (1872), pp.395-397.
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- G. R. K. Greville in "Flora Edinensis," Edinburgh, 1824.
- T.D., T.B.C., or J.B. Thos. Drummond, T. B. Clark, and John Brown in "Localities for plants near Edinburgh," Trans. Bot. Soc. Edin., Vol. xi (1873), pp.470-474.
- FRASER: J. Fraser in "Alien Plants near Edinburgh," Ann. Scot. Nat. Hist., 1904, 1905, 1906, 1907, 1909, 1911.
- EVANS: Wm. Evans and W. Edgar Evans in "Alien Plants near Edinburgh," Ann. Scot. Nat. Hist., 1904. Or from records in Mr. Evans' Herbarium.
- Ex.Cl. Botanical Exchange Club Reports, Vols.i-vii (1879-1924) and Watson Botanical Exchange Club, Annual Reports, Vols. 1-111 (1885-1925). In these cases the initials of the recorder are also included.
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- Bot. Soc. Lists, and Unpublished Records of the Edinburgh Botanical Society.
- Herb. Rec. Record in Herbarium, Royal Botanic Garden, Edinburgh.
-

I. RANUNCULACEAE.

Thalictrum minus Linn.

T.; W.; Sands near Cramond (Herb. Rec.);
Bo'ness (St. Acc.); West from Lord
Roseberry's park (18th cent. rec.).

dunense Dum.

T.; Dalmeny!

majus Crantz

Abercorn (St. Acc.).

Anemone nemorosa Linn.

T.; W.; Hopetoun (B. & S.):

Banks of Almond below Cramond

(Herb. Rec.; B. & S.); Kinneil!;

Cramond Bridge!; near Bathgate!

Ranunculus circinatus Sibth.

T.; Linlithgow Loch (S.).

trichophyllus Chaix

T.

peltatus Schrank

Linlithgow (Herb. Rec.).

var. *floribundus* (Bab.)

Linlithgow Loch (L.B.B.).

Baudotii Godr.

T.; W.; Whitburn!

var. *confusus* (Godr.)

W.; Bo'ness (S.; B. & S.).

Lenormandi F. Schultz

T.; Bo'ness (S.).

hederaceus Linn.

T.; W.; Carlowrie (B. & S.);

Linlithgow (Herb. Rec.); Shore at

Hopetoun (Evans); Cockleroi!;

Whitburn!; Westfield!

sceleratus Linn.

T.; W.; J.H.B.; Linlithgow (B. & S.; S.);

Blackness (Herb. Rec.)!

Flammula Linn.

T.; W.; J.H.B.; Carriber!; Linlithgow!

Blackness!; Kinneil!; Whitburn!;

Drumshoreland!

Lingua Linn.

T.; W.; near Binns (B. & S.);

Linlithgow (S.).

auricomus Linn.

T.; W.; near Linlithgow (J.H.B.;

Herb. Rec.)!; Bo'ness (Herb. Rec.)!

var. <i>vulgatus</i> (Jord.)	near Torphichen!
var. <i>Boraeanus</i> (Jord.)	Almond near Carlowrie!; Armadale!
var. <i>Steveni</i> (Andz.)	Railway Bank near Dalmeny (McT.C. in Ex. Cl.).
<i>repens</i> Linn.	T.; W.; near Linlithgow (J.H.B.)!; Dalmeny!; Armadale!; Blackness!; Bathgate!; Whitburn! Livingstone!; Kirkliston!
<i>bulbosus</i> Linn.	T.; near Linlithgow (J.H.B.)!; Kirkliston!; Almond near Carlowrie!; Blackness!
<i>sardous</i> Crantz ^X	T.; W.; Linlithgow (S.).
<i>arvensis</i> Linn. ^X	T.
<i>Ficaria</i> Linn.	T.; W.; Cramond Bridge (B. & S.)!; Kinneil!; Carribber!; Bathgate (St. Acc.)!; Kirkliston!
<i>monspeliacus</i> Linn. ^X	"Linlithgowshire" (Fraser); Carlowrie!
<i>Caltha palustris</i> Linn.	T.; W.; Linlithgow (B. & S.); Herb. Rec.); Carribber! Armadale!; Abercorn!; Blackness!; Dalmeny! Cockleroi Hill (I.B.B.).
var. <i>minor</i> DC.	T.; W.; Woodcockdale (J.H.B.; I.B.B.; Bot. Soc. Lists)!; Tod's Mill, Bo'ness (St. Acc.); Whitburn (18th Cent. rec.).
<i>Trollius europaeus</i> Linn.	T.; W.; Blackness (J.H.B.); Kirkliston (I.B.B.); S. Queensferry B. & S.; Herb. Rec.); near Dalmeny (Fraser); "Carribber den" (18th cent. rec.).
<i>Aquilegia vulgaris</i> Linn. ^X	J.H.B.; Dalmeny Woods (Evans)!; near Carlowrie Farm!
<i>Aconitum Napellus</i> Linn. ^X	

II. BERBERIDACEAE.

<i>Berberis vulgaris</i> Linn. ^x	T.; W.; Hopetoun (J.H.B.); Dalmeny (B. & S.; S.)!; S. Queensferry (G.; B. & S.; S.); Bellsyde, Linlithgow (Bot. Soc. lists); Railway near Kirkliston (Evans); near Philpstoun!
<i>Epimedium alpinum</i> Linn. ^x	"Linlithgowshire" (Fraser); Carlowrie; (I.B.B.).

III. NYMPHAEACEAE.

<i>Nuphar lutea</i> Sibth. & Sm.	T.; Linlithgow Loch (I.B.B.).
<i>pumila</i> DC.	
var. <i>intermedia</i> Moss	Linlithgow Loch!
<i>Nymphaea alba</i> Linn.	T.; W.; Pond west of Dundas Hill (B. & S.; S.).

IV. PAPAVERACEAE.

<i>Papaver somniferum</i> Linn. ^x	near Hopetoun (Evans); Carriden!; S. Queensferry!
<i>Rhoeas</i> Linn.	T.; W.; S. Queensferry!; Blackness!; Linlithgow!; Torphichen!; Carlowrie!
<i>dubium</i> Linn.	T.; W.; Linlithgow (S.)!; Carriden!; Carlowrie!; Blackness!
<i>Argemone</i> Linn.	T.; W.; Blackness!
<i>Mecanopsis cambrica</i> Vig. ^x	T.; near Kirkliston (I.B.B.; Fraser; Evans)!; Hopetoun (Fraser; Evans)!
<i>Glacium flavum</i> Crantz ^x	T.; W.; Blackness (S.); Barnbogle Castle to Bo'ness (18th cent. rec.).
<i>Chelidonium majus</i> Linn. ^x	T.; W.; Hopetoun (J.H.B.; B. & S.).

V. FUMARIACEAE.

<i>Corvda</i> lis claviculata DC.	T.; W.; Binny Craig (Herb. Rec.); Carlowrie!
<i>Fumaria</i> capreolata Linn.	T.; W.; J.H.B.
<i>purpurea</i> Fugsl.	"West Lothian" (Fraser);
<i>Boraei</i> Jord.	T.; near Carlowrie! Blackness!
<i>micrantha</i> Lag.	T.; W.; near Linlithgow (J.H.B.); Blackness!
<i>officinalis</i> Linn.	T.; W.; near Philpstoun!; Blackness!
<i>Vaillantii</i> Lois.	T.; W.

VI. CRUCIFERAE.

<i>Cheiranthus</i> Cheiri Linn. ^x	Inchgarvie!
<i>asturtium</i> officinale R. Br.	T.; W.; S. Queensferry (Herb. Rec.); Stream near Kirkliston (Evans); Hopetoun!
<i>palustre</i> DC.	T.; W.; Linlithgow (B. & S.; S.); Linlithgow Loch (J.H.B.; Herb. Rec.)!
<i>Barbarea</i> vulgaris R. Br.	T.; W.; near Binns (J.H.B.); Carlowrie!; Craigiehall!; Bo'ness!
<i>stricta</i> Andr. ^x	Banks of Avon between Blackston & Avonbridge (Herb. Rec.).
<i>Arabis</i> hirsuta Scop.	T.; W.; J.H.B.
<i>Turrita</i> Linn. ^x	T.; Kinneil (S.); Linlithgow (S.).
<i>Cardamine</i> pratensis Linn.	T.; W.; Westfield, Linlithgow (Herb. Rec.); Dalmeny!; Abercorn!; Carribber! Kirkliston!; Hopetoun!; Cramond Bridge!; Whitburn!
<i>hirsuta</i> Linn.	T.; W.; Linlithgow (Herb. Rec.); Abercorn!; Kinneil!; Hopetoun!

<i>flexuosa</i> With.	W.; Hopetoun (J.H.B.); Linlithgow (B. & S.)!; Dalmeny!
<i>Erophila verna</i> E. Meyer	T.; W.; Blackness (J.H.B.); Queensferry Road (Herb. Rec.); Abercorn!; Carribber!
<i>Cochlearia officinalis</i> Linn.	T.; W.; Blackness (J.H.B.; Herb. Rec.)!; Dalmeny (Herb. Rec.)!; Carribber Castle (Herb. Rec.); Abercorn!; Hopetoun!; Society!; Inchgarvie!
<i>Hesperis matronalis</i> Linn.	Knock Hill (J.H.B.).
<i>Sisymbrium Thalianum</i> Gay	T.; W.; Kipps (J.H.B.); Linlithgow (B. & S.; S.)!
<i>officinale</i> Scop.	T.; W.; near Linlithgow (J.H.B.)!; S. Queensferry!; Kirkliston!; Blackness!; near Bathgate!
var. <i>leiocarpum</i> DC.	T.; S. Queensferry (Fraser).
<i>Alliaria</i> Scop.	T.; W.; J.H.B.; Kirkliston (Herb. Rec.)!; Blackness (Herb. Rec.); Carlowrie!; Linlithgow!; Hopetoun!; Bathgate St. Acc.)!
<i>Loeselii</i> Linn.	Waste ground near S. Queensferry (Evans).
<i>Erysimum cheiranthoides</i> Linn.	T.; w.
<i>orientale</i> Mill.	S. Queensferry (Templeman in Ex. Cl.); Bo'ness!
<i>Subularia aquatica</i> Linn.	Linlithgow Loch (S.).
<i>Brassica Napus</i> Linn.	Carlowrie!
<i>Rutabaga</i> DC.	Carlowrie!
<i>Rapa</i> Linn.	J.H.B.; Linlithgow (B. & S.; S.); Livingstone!; Dalmeny!
<i>monensis</i> Hudg.	T.; Grangemouth to S. Queensferry (S.).
<i>nigra</i> Koch.	T.; Bridge over Avon, Bo'ness (B. & S.; S.); Bo'ness (Herb. Rec.).
<i>arvensis</i> O. Kuntze	T.; W.; J.H.B.; Kirkliston!; Linlithgow!; Bo'ness!; Bathgate!; Broxburn!; Armadale!
<i>alba</i> Boiss.	T.; W.; J.H.B.; Linlithgow (B. & S.; S.).

<i>Diplotaxis tenuifolia</i> DC. ^x	Abercorn!; Bo'ness!
<i>Capsella Bursa-pastoris</i> Medik.	T.; W.; Bo'ness (Herb. Rec.)!; Blackness!; Linlithgow!; Whitburn!; Dalmeny!
<i>Coronopus didymus</i> Sm. ^x	Linlithgow (S.).
<i>procumbens</i> Gilib. ^x	Among rubbish west from Hopetoun House (Herb. Rec.). "ad vias et in littore maris from Musselburgh to Hopetoun House" (18th Cent. rec.).
<i>Lepidium latifolium</i> Linn. ^x	Kinneil (S.).
<i>campestre</i> Br.	T.; W.; J.H.B.; Linlithgow (B. & S.; S.).
<i>heterophyllum</i> Benth. var. <i>canescens</i> Gren. & Godr.	W.; J.H.B.; Linlithgow (B. & S.; S.); Kinneil (S.).
<i>Draba</i> Linn. ^x	T.; Linlithgow (S.).
<i>hirtum</i> Sm. ^x	T.
<i>Thlaspi arvense</i> Linn.	T.; W.; Blackness (J.H.B.; B. & S.; S.).
<i>Iberis amara</i> Linn. ^x	W.; Linlithgow (I.B.B.).
<i>pectinata</i> Boiss. ^x	S. Queensferry (Evans).
<i>Myagrum perfoliatum</i> Linn. ^x	S. Queensferry (Evans).
<i>Biscutella laevigata</i> Linn. ^x	Kinneil (S.).
<i>Bunias orientalis</i> Linn. ^x	S. Queensferry!
<i>Crambe maritima</i> Linn.	T.; W.; Dalmeny (B. & S.; S.).
<i>Raphanus Raphanistrum</i> Linn.	T.; W.; Carriden!; Kirkliston!; Carlowrie!

VII. RESEDACEAE

<i>Reseda alba</i> Linn. ^x	T.; Bo'ness (B. & S.; S.).
<i>lutea</i> Linn.	T.; W.; Carriden!; Carlowrie!
<i>Luteola</i> Linn.	T.; W.; Carriden!

VIII. CISTACEAE

Helianthemum Chamaecistus
Mill.

Bathgate (St. Acc.); Near Linlithgow!

IX. VIOLACEAE.

Viola odorata Linn.

Bo'ness (S.); Hopetoun!

palustris Linn.

T.; W.; Linlithgow (Herb. Rec.);

Kinneil! Armadale!

Riviniiana Reichb.

T.; W.; J.H.B.; Dalmeny (B. & S.)!;

Carribber!; near Carlowrie!; Linlithgow!;

Cramond Bridge!

var. *diversa* Gregory

Dundas Castle (McT.C. in Ex. Cl.).

canina Linn.

W.; near Niddry Castle (J.H.B.);

Dalmeny (B. & S.; Herb. Rec.).

var. *ericerorum* Reichb.

T.

Lloydii Jord.

Whitburn!; Livingstone!

obtusifolia Jord.

Blackness!

ruralis Jord.

Dalmeny!

(*tricolor* Linn.

T.; W.; J.H.B.).

(*arvensis* Murr.

T.; W.; near Niddry Castle (J.H.B.).

lutea Huds.

W.; Knock Hill (J.H.B.)!; Linlithgow

(B. & S.)!; Riccarton Hills (Herb. Rec.)!;

Livingstone (St. Acc.); Carribber!

X. POLYGALACEAE.

Polgala vulgaris Linn.

T.; W.; Fauldhouse!; Carribber!

serpyllacea Weihe

Linlithgow!; Fauldhouse!; Armadale!

XI. CAROPHYLLACEAE

Dianthus deltoides Linn.

T.; W.; Niddry Castle (J.H.B.).

caesius Sm.

Bo'ness (S.).

aponaria officinalis Linn.

T.; Dalmeny!

Silene Cucubalus Wibel

T.; W.; Linlithgow (B. & S.)!; Carlowrie!

Carriden!; Dalmeny!; Blackness!

var pubescens DC. Linlithgow!

maritima With. T.; W.

Armeria Linn. T.; "Linlithgowshire" (B. & S.).

Lychnis alba Mill. T.; W.; Dalmeny!; Hopetoun!; Cramond
Bridge!; Inchgarvie!

x dioica Linlithgow!; Kirkliston!; Kinneil!;
Bathgate!

dioica Mill. T.; W.; J.H.B.; Linlithgow (B. & S.)!;
Dalmeny!; S. Queensferry!; Kinneil!;
Cramond Bridge!; Kirkliston!

Flos-cuculi Linn. T.; W.; Dalmeny!; Blackness!; Linlithgow!;
Kirkliston!; Armadale!; Westfield!

Viscaria Linn. Dundas Hill (Wernerian Soc. Rec.).

Githago Scop. T.; W.

Holosteum umbellatum Linn. Carriden (S.).

Cerastium tetrandrum Curt. Knock Hill (J.H.B.); Roadside near
Kirkliston (Herb. Rec.); Dalmeny!

semidescandrum Linn. Society!; Dalmeny!; Inchgarvie!

viscosum Linn. T.; W.; J.H.B.; Dundas Hill (Herb. Rec.);
Linlithgow (B. & S.)!; Society!;
Kirkliston!; Hopetoun!

vulgatum Linn. T.; W.; Linlithgow!; Kirkliston!

Stellaria media Will. T.; W.; Dalmeny!; Hopetoun!; Linlithgow!;
Bathgate!; Livingstone!

Holostea Linn. T.; W.; near Linlithgow (Herb. Rec.)!;
Kinneil!; Carlowrie!; Carribber!;
Kirkliston!; Cramond Bridge!

glauca With. Linlithgow Loch (J.H.B.).

graminea Linn. T.; W.; Carlowrie!; Kinneil!;
Torphichen!; Linlithgow!

ugiliosa Murr. T.; W.; Linlithgow (Herb. Rec.);
Livingstone!; Carribber (Evans); Cockleroi!;
Whitburn!

x
Arenaria tenuifolia Linn. T.; Bo'ness (S.).

<i>trinervia</i> Linn.	T.; W.; J.H.B.; Linlithgow (B. & S.); Dalmeny!; Cramond Bridge!; Hopetoun!
<i>serpyllifolia</i> Linn.	T.; W.; Blackness (J.H.B.)!; Carribber (Evans).
<i>peploides</i> Linn.	W.; Blackness (J.H.B.)!; Dalmeny (Herb. Rec.)!; Society!; S. Queensferry!
<i>Sagina maritima</i> G. Don	T.; W.; Blackness (J.H.B.); Dalmeny (Herb. Rec.; Bot. Soc. Lists); Bo'ness (St. Acc.).
<i>apetala</i> Ard.	T.; W.; Cramond (S.); Carribber!; Dundas!; Kirkliston!; Blackness!
<i>procumbens</i> Linn.	T.; W.; Kirkliston!; Dalmeny!;
<i>nodosa</i> Fenzi.	T.; S. Queensferry (G.; S.; B. & S.); Reservoir at Hopetoun House (Herb.Rec. Abercorn (St. Acc.)).
<i>subulata</i> Presl.	T.; W.; Kipps (J.H.B.); Dalmeny (S.; B. & S.; St. Acc.); Sea rocks at Dalmeny (Herb. Rec.; Bot.Soc.lists).
<i>Spergula vulgaris</i> Boenn.	T.; W.; Livingstone!; Linlithgow!; Kirkliston!; Whitburn!; Blackridge!
<i>sativa</i> Boenn.	T.
<i>Spergularia rubra</i> Presl.	T.; W.; Abercorn (St. Acc.).
<i>salina</i> Presl.	T.; Abercorn (St. Acc.); Blackness (J.H.B.).
var. <i>neglecta</i> (Syme)	Blackness (Herb. Rec.).
<i>marginata</i> Kittel	Carriden!; Blackness!

XXII. PORTULACACEAE

<i>Montia fontana</i> Linn.	T.; W.; Dalmeny (B. & S.).
var. <i>lamprosperma</i> Chamisso	Dalmeny!; Hopetoun!; Cochleroi!; Kirkliston!; Armadale!

XIII. HYPERICACEAE.

<i>Hypericum calycinum</i> Linn.	Carriden Glen (S.).
<i>perforatum</i> Linn.	W.; Carribber!; Linlithgow!; Dalmeny!
<i>dubium</i> Leers	T.; W.
<i>tetrapterum</i> Fr.	T.; W.; Dalmeny Woods (Herb. Rec.); Hopetoun!
<i>hemifusum</i> Linn.	Binns (J.H.B.); Queensferry near Lord Roseberry's gate (Herb. Rec.).
<i>pulchrum</i> Linn.	T.; Abercorn (St. Acc.); Carribber!; Drumshoreland!; Linlithgow!; Bathgate!
<i>hirsutum</i> Linn.	T.; Wood north of Livingstone (St. Acc.); Dalmeny Shore!; Hopetoun!; near Philpstoun!

XIV. MALVACEAE.

<i>Lavatera arborea</i> Linn.	Inchgarvie (Wernerian Soc. Rec.).
<i>Malva moschata</i> Linn.	T.; W.; Bo'ness (S.); Bathgate (St. Acc.); near Kirkliston (Templeman in Ex. Cl.).
<i>sylvestris</i> Linn.	T.; W.; Banks of the Avon (B. & S.; S.; Herb. Rec.); Linlithgow (B. & S.; S.); Kirkliston!; Inchgarvie!
<i>rotundifolia</i> Linn.	S. Queensferry (Herb. Rec.).

XV. TILIACEAE.

<i>Tilia platyphyllos</i> Scop.	T.
<i>vulgaris</i> Hayne	T.; Dalmeny!; Drumshoreland!; Hopetoun!; Linlithgow!
<i>cordata</i> Mill.	T.; Carriden (S.).

XVI. LINACEAE

<i>Linum catharticum</i> Linn.	T.; W.; Bathgate (St. Acc.); Kirkliston (Herb. Rec.); Fauldhouse!; Linlithgow!; Dalmeny!
<i>usitatissimum</i> Linn.	T.

XVII. GERANIACEAE.

<i>Geranium nodosum</i> Linn. ^x	T.; J.H.B.; Carriden Glen (S.).
<i>phaeum</i> Linn. ^x	T.; near Linlithgow (G.; B. & S.; S.); Bo'ness (St. Acc); Kinneil (S.); Carribber (I.B.B.); Society!
<i>sylvaticum</i> Linn.	T.; W.; Woodcockdale (J.H.B.)!; Hopetoun (B. & S.)!
<i>pratense</i> Linn.	T.; W.; J.H.B.; Kirkliston!; S. Queensferry!; Kinneil!
<i>pyrenaicum</i> Burm. fil.	Dalmeny (S.).
<i>molle</i> Linn.	T.; W.; Dalmeny! Linlithgow!; Kirkliston!; Blackness!
<i>pusillum</i> Linn.	T.; Linlithgow (S.).
<i>dissectum</i> Linn.	T.; W.; J.H.B.; Kinneil (S.); Linlithgow!; Kirkliston!; Society!; near Torphichen!; Bathgate!
<i>lucidum</i> Linn.	T.; W.; Woods at Hopetoun House (Herb. Rec.); Linlithgow (Herb. Rec.)!; Blackness!; S. Queensferry!
<i>Robertianum</i> Linn.	T.; W.; Linlithgow!; Bathgate!; Torphichen!; Kirkliston!; Dalmeny!
<i>Erodium cicutarium</i> L'Herit.	T.; W.
var. <i>triviale</i> (Jord.)	Dalmeny Shore!
<i>Oxalis Acetosella</i> Linn.	T.; W.; Carlowrie!; Kinneil!; Carribber.
<i>Impatiens Noli-tangere</i> Linn. ^x	T.; Carriden Glen (S.).

XVIII. AQUILFOLIACEAE.

<i>Ilex Aquifolium</i> Linn.	T.; W.; J.H.B.; Hopetoun (Herb. Rec.)!; Dalmeny!
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XIX. CELASTRACEAE.

<i>Saxifraga europaea</i> Linn. ^x	T.; W.; Dalmeny (S.; I.B.B.)!
<i>latifolius</i> (L.) Scop. ^x	Hopetoun Woods (Evans)!

XX. ACERACEAE.

<i>Acer Pseudo-platanus</i> Linn. ^x	T.; Dalmeny (Herb. Rec.)!; Hopetoun!;
	Kinneil!; Drumshoreland!; Linlithgow!
<i>campestre</i> Linn. ^x	T.; W.; Hopetoun (J.H.B.)!; Linlithgow;
	(B. & S.; S.); S. Queensferry (Fraser).

XXI. LEGUMINOSAE.

<i>Genista tinctoria</i> Linn. ^x	T.; Canal near Middry Castle (J.H.B.);
	Drumshoreland Moor (B. & S.; Herb. Rec.).
<i>Ulex europaeus</i> Linn.	T.; W.; Dalmeny (Herb. Rec.)!; Kinneil!;
	Armadale!; Linlithgow!
<i>Cytisus scoparius</i> Link.	T.; W.; Linlithgow (Herb. Rec.)!;
	Kirkliston!; Dalmeny!; Inchgarvie!;
	Armadale!
<i>Ononis repens</i> Linn.	T.; W.; Abercorn (St. Acc.); Dalmeny!;
	Linlithgow!; Winchburgh!; Bathgate!
<i>Medicago sativa</i> Linn. ^x	T.; S. Queensferry!
<i>lupulina</i> Linn.	T.; W.; Kinneil!; S. Queensferry!;
	Inchgarvie!; Bathgate!
<i>arabica</i> Huds. ^x	T.; Linlithgow (S.).
<i>Melilotus alba</i> Desr. ^x	Carriden!
<i>officinalis</i> Lam. ^x	Carriden!
<i>indica</i> All. ^x	Railway siding at S. Queensferry (Evans)
<i>Trifolium pratense</i> Linn.	T.; W.; Linlithgow!; Cramond!; Banks
	of the Almond near Carlowrie!
<i>medium</i> Linn.	T.; W.; Linlithgow!; Carlowrie!;
	Armadale!; Blackness!; Bathgate!
<i>incarnatum</i> Linn. ^x	T.; Bo'ness (S.).
<i>arvense</i> Linn.	Inchgarvie!
<i>striatum</i> Linn.	T.; W.; Bo'ness (S.); Dalmeny!
<i>hybridum</i> Linn. ^x	T.; Bo'ness (Herb. Rec.); S. Queensferry
	(Herb. Rec.); Kirkliston!; Blackness!
<i>repens</i> Linn.	T.; W.; Dalmeny!; Inchgarvie!;
	Blackness!; Blackridge!

<i>procumbens</i> Linn.	T.; W.; Dundas Hill (B. & S.); S. Queensferry!
<i>dubium</i> Sibth.	T.; W.; S. Queensferry!; Meadows near Linlithgow (Evans); Dalmeny!; Blackness!
<i>filiforme</i> Linn. (probably <i>dubium</i>)	T.; W.; Linlithgow (Herb. Rec.); S. Queensferry (Herb. Rec.).
<i>thyllis vulneraria</i> Linn.	T.; W.; Linlithgow (B. & S.); Carriden!
<i>Lotus corniculatus</i> Linn.	T.; W.; Linlithgow (B. & S.)!; Dalmeny!; Hopetoun (Herb. Rec.)!; Blackness!
<i>tenuis</i> Waldst. & Kit.	T.; W.; Linlithgow (J.H.B.).
<i>ugilinosus</i> Schkuhr.	T.; W.; Dalmeny!; Armadale!; Blackridge!
<i>tragalus danicus</i> Retz.	T.; W.; Abercorn (St. Acc.); Dalmeny.
<i>glycyphyllos</i> Linn.	T.; W.; Abercorn (St. Acc.); Coast between Cramond and S. Queensferry (G.).
<i>Coronilla varia</i> Linn. x	T.; near Kirkliston (Fraser; Evans; McT. C. in Ex. Cl.).
<i>Ornithopus perpusillus</i> Linn.	Carriden (S.); Bellisde; Linlithgow (Herb. Rec.).
<i>Onobrychis viciaefolia</i> x Scop.	T.; Carriden (S.); Kinneil (S.).
<i>Vicia hirsuta</i> Gray	T.; W.; S. Queensferry!; near Philpstoun!; Bo'ness!; Inchgarvie!
<i>Gracca</i> Linn.	T.; W.; Linlithgow!; Kirkliston!; Carriden!
<i>Orobis</i> DC.	T.; W.
<i>sepium</i> Linn.	T.; W.; S. Queensferry!; Kirkliston!; Linlithgow!
<i>lutea</i> Linn. x	T.; Bo'ness (S.).
<i>sativa</i> Linn. x	W.; Waste ground near Dalmeny (Herb. Rec.); Kirkliston!; S. Queensferry!
<i>angustifolia</i> Linn.	T.; W.; Dalmeny (Herb. Rec.).
<i>lathyroides</i> Linn.	Inchgarvie!

<i>Lathyrus Aphaca</i> Linn. ^x	Avon Banks from Bowhouse to Blackstone (Herb. Rec.).
<i>pratensis</i> Linn.	T.; W.; canalside near Linlithgow (Herb. Rec.); Kinneil!; Linlithgow!; Carlowrie! Kirkliston!; Carriden!; Armadale!
<i>montanus</i> Bernh.	T.; Westfield, Linlithgow (Herb. Rec.)!; near Carribber!; Bathgate!
<i>Pisum arvense</i> Linn. ^x	Avon Banks from Bowhouse to Blackstone (Herb. Rec.).
<i>Trigonella Lamosa</i> Linn. ^x	Waste ground near S. Queensferry (Evans).

XXII. ROSACEAE.

<i>Prunus spinosa</i> Linn.	T. & W.; Dalmeny!; Cramond Bridge!
<i>insititia</i> Linn.	T.
<i>avium</i> Linn.	T.; Carribber!; Dalmeny!; Cramond Bridge!
<i>Padus</i> Linn.	T.; W.; J.H.B.; Linlithgow (B. & S.; S.; Herb. Rec.); Carribber Glen! Cramond Bridge!; near Philpstoun!
<i>Spiraea salicifolia</i> Linn. ^x	Carriden (S.); Craigiehall Woods (Werienian Soc. Rec.); Dalmeny Woods (Bot. Soc. lists.).
<i>Ulmaria</i> Linn.	T.; W.; Linlithgow (Herb. Rec.)!; Society!; Blackness!; Dalmeny!
<i>opulifolia</i> Linn. ^x	Drumshoreland Moor (Herb. Rec.).
<i>Rubus idaeus</i> Linn.	T.; W.; Cramond!; Blackridge! Hopetoun!; Bo'ness!; Linlithgow!
(<i>Rubus fruticosus</i> Linn.	Society!; Carlowrie!; Linlithgow! Dalmeny!; Bathgate!)
<i>latifolius</i> Bab.	near Cramond Bridge (T.; B. & S.); W.
<i>incurvatus</i> Bab.	T.; Linlithgow (S.).
<i>villicaulis</i> Koehl.	T.; W.; Carriden (S.).

Selmeri Lindeb.	Cramond Bridge (T.).
macrophyllus Whe. & Ness.	T.
Schlechtendalii Whe.	T.; W.
mucronatus Blox.	T.; W.
radula Whe.	T.; Linlithgow (S.).
var. echinatosides Rogers	T.
Koehleri Whe. & Ness.	T.
corvulifolius Sm.	T.
caesius Linn.	W.; Cramond Bridge (T.); Bo'ness (S.); Hopetoun (Herb. Rec.).
Geum urbanum Linn.	T.; W.; Dalmeny!; Linlithgow!; Kirkliston!; Society!; Armadale!
rivale Linn.	T.; W.; Linlithgow (B. & S.); Lochcote near Linlithgow (Herb. Rec.); Kinneil!; Banks of the Almond!; Craigiehall!
x-urbanum (intermedium Ehrh.)	S. Queensferry!; Dalmeny!
Fragaria vesca Linn.	T.; W.; Carlowrie!; Linlithgow!; Kinneil!; Hopetoun!; S. Queensferry!
moschata Duchesne	Linlithgow (Herb. Rec.).
Escaped garden plants also occur.	
Potentilla sterilis Garcke	W.; Kirkliston (Herb. Rec.); S. Queensferry!; Dalmeny!; Carribber!; Cramond Bridge!
erecta Hampe	T.; W.; Drumshoreland Moor (Herb. Rec.); near Linlithgow (Herb. Rec.); Kinneil!; Dalmeny!; Fauldhouse!; near Bathgate Armadale!
reptans Linn.	T.; W.; Dalmeny Coast (Herb. Rec.; Bot. Soc. lists)!; Hopetoun (Herb. Rec.); Linlithgow!; Fauldhouse!
Anserina Linn.	T.; W.; Linlithgow (B. & S.); Blackness!; Society!; Dalmeny!; Bo'ness!; S. Queensferry!

var. concolor Wallr.	Abercorn (McT. C. in Ex. Cl.).
argentea Linn.	T.; W.; Binnv Craig (Wernerian Soc. Rec.); Craig Brae near Dundas Castle (G.).
palustris Scop.	T.; W.
Alchemilla arvensis Scop.	T.; W.; near S. Queensferry (Herb. Rec.); Kirkliston!; Linlithgow!; Dalmeny! Blackness!
(vulgaris Linn. (Agg.))	T. & W.; Linlithgow (Herb. Rec.))
pratensis Schmidt	near Carlowrie!; Torphichen!
minor Huds.	Armadale!; Hopetoun!
var. filicaulis (Buser)	T.; Bathgate!; Kirkliston!; Blackridge!
alpestris Schmidt.	Hopetoun (McT. C. in Ex. Cl.).
argentea G. Don	T.
Agrimonia Eupatoria Linn.	T.; W.
odorata Mill.	T.
Rosa arvensis Huds.	W.; Hopetoun (Evans).
stylosa Desv.	
var. systyla Baker	W.?
spinosissima Linn.	W.
var. pimpinellifolia Linn.	T.; Dalmeny Shore!
x involuta (Sm.)	T.; W.; Kinneil (S.).
x Sabini (Woods)	T.; W.
canina Linn.	W.; Kinneil!; Dalmeny!; Linlithgow!; S. Queensferry!
var. lutetiana Baker	Riccarton!
var. separabilis (Deségl.)	Carribber!
var. dumalis (Bechst.)	Kinneil!; Linlithgow!
dumetorum Thuill.	Carribber!; Linlithgow!
glauca Vill.	Dalmeny Woods (Herb. Rec.)!; Armadale!
var. subcristata (Baker)	Kirkliston!; Almond near Broxburn!
var. adenophora (Gren.)	Dalmeny Shore!
mollis Sm.	Carribber!; Dalmeny!

<i>omissa</i> Déségl.	Dalmeny!; Blackness!
<i>tomentosa</i> Sm.	T.; W.; Dalmeny!
var. <i>typica</i> Chr.	Riccarton!
var. <i>pseudo-cuspidata</i> (Crép.)	Dalmeny Shore!
<i>rubiginosa</i> Linn.	T.; W.; J.H.B.; Dalmeny (St. Acc.)!; Linlithgow (B. & S.; S.); Hopetoun (Evans); east of Barnbogle (18th cent. Rec.)!
var. <i>echinocarpa</i> Gren.	Dalmeny Shore!
<i>sempervirens</i> Linn. ^x	T.
<i>alpina</i> Linn. ^x	T.; Carribber Castle (J.H.B.).
<i>rugosa</i> Thun.	Dalmeny!
<i>Sorbus aucuparia</i> Linn.	T.; W.; Dalmeny (Herb. Rec.)!; Hopetoun!; Linlithgow!; near Bathgate!; Kirkliston!; Drumshoreland!
<i>Aria</i> Crantz ^x	T.; W.; Linlithgow!; near Bathgate!
<i>terminalis</i> Crantz	Dalmeny Woods (Herb. Rec.).
<i>Pryus communis</i> Linn.	T.; Dalmeny (B. & S.; S.); East from S. Queensferry at a park dyke (18th cent. Rec.).
<i>Malus</i> Linn. ^x	T.; W.; J.H.B.; Carlowrie (B. & S.; S.); Dalmeny (B. & S.; S.; Herb. Rec.).
<i>Crataegus Oxycantha</i> Linn. (probably monogyna)	T.; W.; J.H.B.; Carlowrie (B. & S.); Linlithgow (B. & S.); Bonnytown; Linlithgow (Herb. Rec.).
<i>monogyna</i> Jacq.	Dalmeny (McT. C. in Ex. Cl.)!; Kirkliston!; Society!; Kinneil!; Whitburn!; Armadale!

XXIII. SAXIFRAGACEAE.

<i>Saxifraga Geum</i> Linn. ^x	T.; Kirkliston (Evans; Herb. Rec.)!
var. <i>serrata</i> Sm.	
x <i>hirsuta</i> var. <i>acutidens</i> ^x	Kirkliston (Evans)!
E. S. Marshall ^x	
<i>hirsuta</i> Linn. ^x	T.; Kirkliston (Herb. Rec.).

<i>r. acutidens</i> E. S. Marshall	Kirkliston (Evans)!
<i>umbrosa</i> Linn.	T.; Linlithgow (Herb. Rec.); Craigiehall!; near Philpstoun!
<i>tridactylites</i> Linn.	T.; W.; Linlithgow (B. & S.; S.); Blackness Castle (J.H.B.).
<i>granulata</i> Linn.	T.; W.; J.H.B.; Dalmeny (S.); Hopetoun House (Herb. Rec.); Bathgate (St. Acc.); Banks of the Almond (Herb. Rec.); Linlithgow (Bot. Soc. lists); Almond at Carlowrie! Craigiehall!
<i>Chrysosplenium</i> <i>oppositifolium</i> Linn.	T.; W.; Linlithgow (B. & S.); Abercorn (St. Acc.); Cramond!; Carlowrie! Kinneil!
<i>alternifolium</i> Linn.	Abercorn (St. Acc.); Tod's Mill; Bo'ness (St. Acc.).
<i>Parnassia palustris</i> Linn.	T.; W.; Abercorn (St. Acc.).
<i>Ribes Grossularia</i> Linn.	Cramond!; Society!; Kirkliston!
<i>alpinum</i> Linn.	T.; W.; Dalmeny (B. & S.; S.; Herb. Rec.); Cramond (S.); West of S. Queensferry in policies (Fraser); Hopetoun!
<i>rubrum</i> Linn.	near Lochcote, Linlithgow (Herb. Rec.); Carribber!
<i>nigrum</i> Linn.	Cramond (S.); Banks of the Almond, west side (Herb. Rec.); Craigiehall!

XXIV. CRASSULACEAE.

<i>Sedum album</i> Linn.	T.; Bo'ness (S.).
<i>acre</i> Linn.	T.; W.; Queensferry!; Kirkliston! Dalmeny!; Cramond Bridge!
<i>villosum</i> Linn.	T.; W.; Knock Hill (J.H.B.); Linlithgow (G.; B. & S.; Herb. Rec.).

XXV. DROSERACEAE.

Drosera anglica Huds. T.

XXVI. HALORAGACEAE.

- Hippuris vulgaris* Linn. Bathgate (St. Acc.); Bo'ness (St. Acc.).
- Myriophyllum spicatum* Linn. T.; W.; J.H.B.; Linlithgow Loch (B. & S.; Herb. Rec.); Kinneil!; Canal near Carribber (Evans).
- alterniflorum* DC. T.; W.; Linlithgow Loch (S.; Herb. Rec.).
- Callitriche vernalis* Koch. T.; W.; Linlithgow (B. & S.); Cramond Bridge!; Fauldhouse!; Dundas!
- stagnalis* Scop. T.; W.; J.H.B.; Linlithgow (Herb. Rec.); Dundas!; Cockleroi!; Whitburn!; Westfield!
- intermedia* Hoffm. W.

XXVII. ONAGRACEAE.

- Epilobium angustifolium* Linn. T.; W.; J.H.B.; Abercorn Woods (Herb. Rec.) G.; Wernerian Soc. Rec.)!; Carriden!; S. Queensferry!; Carlowrie!; Dalmeny!; Kirkliston!
- hirsutum* Linn. T.; W.; Abercorn Park pond (B. & S.); Winchburgh!; Dalmeny!; Kirkliston!; Blackness!; Hopetoun!
- parviflorum* Schreb. T.; Kirkliston (G.; Bot. Soc. lists.); Dalmeny!
- montanum* Linn. W.; Bo'ness!; Bathgate!; Linlithgow!; Kirkliston!; Hopetoun! Dalmeny!
- roseum* Schreb. S. Queensferry!
- tetragonum* Curt. T.
- obscurum* Schreb. T.; Canal near Linlithgow (Evans).
- palustre* Linn. W.; Linlithgow!; Kinneil!; Armadale!
- alsinefolium* Vill. W.
- Oenothera biennis* Linn. T.; Brig Nets, Linlithgowshire (B. & S.; S.); Linlithgow (I.B.B.).

Circaea lutetiana Linn.
alpina Linn.
var. *intermedia*
(Ehrh.)

T.; Linlithgow (Herb. Rec.).
Woodcockdale Woods (Herb. Rec.);
Linlithgow (Herb. Rec.); Hopetoun!

XXVIII. UMBELLIFERAE.

Hydrocotyle vulgaris Linn. x
Astrantia major Linn. x
helliborifolia Sabisb. x
Sanicula europaea Linn.
Conium maculatum Linn.
pium nodiflorum Reichb. fil.
inundatum Reichb. fil.
Carum Petroselinum Benth. & x
Hook. fil. x
Carvi Linn. x
Sium latifolium Linn. x
Egopodium Podagraria Linn. x
Pimpinella Saxifraga Linn.
major Huds.?
Conopodium majus Loret
Myrrhis Odorata Scop.

T.; W.; Philpstoun Loch (Herb. Rec.).
T.; Linlithgow (Herb. Rec.); Carriber
(I.B.B.; Fraser)!
"A Wood in Linlithgowshire" (Fraser);
near Dalmeny (Evans)!
T.; W.; Carriber!; Dalmeny!; Hopetoun!;
Cramond Bridge!
T.; W.
T.; W.
T.; Drumshoreland Moor (Herb. Rec.)!;
Philpstoun Loch (Herb. Rec.).
T.; J.H.B.; Linlithgow (B. & S.).
T.; between Newhall & S. Queensferry
(B. & S.; G.; Wernerian Soc. Rec.);
Abercorn (G.; B. & S.; Wernerian Soc.
Rec.).
T.; Kinneil (S.).
T.; W.; Craigiehall (Herb. Rec.);
Dundas!; Kirkliston!; Linlithgow!
T. & W.; near Linlithgow!
T.; Linlithgow (S.).
T.; W.; Carlowrie!; Dalmeny! Kinneil!;
Carriber!; Cramond Bridge!
T.; W.; near Midday Castle (J.H.B.);
Linlithgow (Herb. Rec.)!; Kirkliston!;
Dalmeny!; Queensferry!; Society!;
Cramond Bridge!

Macrophyllum temulum Linn.

T.; W.; Linlithgow (Herb. Rec.);
near Bo'ness (Herb. Rec.); Carlowrie!

Scandix Pecten-Veneris ^x
Linn.

T.; W.; Kirkliston (Herb. Rec.).

Anthriscus vulgaris Bernh.

T.; W.; near Linlithgow (J.H.B.);
near Midday Castle (J.H.B.); Dalmeny!

sylvestris Hoffm.

T.; W.; Dalmeny (Herb. Rec.);
Hopetoun!; Society!; Inchgarvie!

Oenanthe Lachenalii G.

Gmel.

Carriden (S.).

crocata Linn.

T.; W.; Blackness (Herb. Rec.)!;
Dalmeny (Herb. Rec.)!; S. Queensferry
(Bot. Soc. lists.)!; Linlithgow!
Hopetoun!

Aesthusa Cynapium Linn.

T.; J.H.B.; Kirkliston (Herb. Rec.;
Bot. Soc. lists).

Meum Athamanticum Jacq.

T.

Ligusticum scoticum Linn.

Coast from Barnbogle to Hopetoun
(Wernerian Soc. Rec.); Abercorn (St.Acc.

Angelica sylvestris Linn.

T.; W.; Dalmeny!; Cramond Bridge!
Armadale!; Linlithgow!; Drumshoreland!

Peucedanum Ostruthium Koch. ^x

T.

Heracleum Sphondylium Linn.

T.; W.; Carlowrie!; Dalmeny!; Hopetoun!
Society!; Linlithgow!; Inchgarvie!

var. *angustifolium* Huds.

Woods near Kirkliston (G.; B. & S.);
Cramond Bridge!

Daucus Carota Linn.

T.; W.; Dalmeny!; railway near Philpstoun
(Evans).

Caucalis Anthriscus Huds.

T.; W.; Society!; Linlithgow!
Dalmeny!

XXIV. ARALIACEAE.

Hedera Helix Linn.

T.; W.; Hopetoun (B. & S.)!
Dalmeny!; Kinneil!

XXX. CORNACEAE.

Cornus sanguinea Linn.
(probably *C. stolonifera*)

stolonifera Mich.

T.; W.; Dalmeny (B. & S.; S.; Herb. Rec.; Bot. Soc. lists.); Dalmeny near Kirkliston (Fraser)!; West of S. Queensferry (Fraser); Dalmeny (Evans)!; Carlowrie (Evans); Railway near Kirkliston (Evans); Dundas!

XXXI. CAPRIFOLIACEAE.

Adoxa Moschatellina Linn.

T.; Bathgate (St. Acc.); Bo'ness (St. Acc.).

Sambucus nigra Linn.

T.; W.; Drumshoreland!; Society!; Dalmeny!; Cramond Bridge!

var. *laciniata* Mill.

Carlowrie (Evans).

Ebulus Linn.

T.; Bo'ness (S.).

Viburnum Opulus Linn.

T.; Dalmeny (Evans); Bo'ness (St. Acc.).

Lantana Linn.

Hopetoun Gate near Society (Evans); Railway near Carlowrie!; Cramond Bridge!; near Philpstoun!

Lonicera Caprifolium Linn.

T.; Hopetoun (J.H.B.)!; Linlithgow (B. & S.; S.); Dalmeny (S.; Herb. Rec.; St. Acc.; Bot. Soc. lists.).

Periclymenum Linn.

T.; W.; Hopetoun (J.H.B.)!; Dalmeny!; Drumshoreland!; Carlowrie!; Society!; Cramond Bridge!; Kirkliston!; Armadale!

Xylosteum Linn.

Dalmeny (Herb. Rec.); Hopetoun Woods (Evans).

Symphoricarpus racemosus
Michx.

T.; Dalmeny (Herb. Rec.)!; near Kirkliston (Fraser)!; Armadale!

XXXII. RUBIACEAE

<i>Galium Cruciata</i> Scop.	T.; W.; Linlithgow (Herb. Rec.)!;
	Dalmeny (Herb. Rec.)!; Carlowrie!;
	Kinneil!; Kirkliston!; Bathgate!
<i>verum</i> Linn.	T.; W.; Linlithgow (Herb. Rec.)!;
	Kirkliston!; Inchgarvie!; Torphichen!;
	Blackridge!; Bathgate!
<i>Mollugo</i> Linn.	T.; W.; Kirkliston (B. & S.; S.);
	Carlowrie!
<i>saxatile</i> Linn.	T.; W.; Linlithgow (Herb. Rec.)!;
	Drumshoreland!; Hopetoun!; Whitburn!;
	Fauldhouse!; Blackridge!
<i>palustre</i> Linn.	W.; Dalmeny (B. & S.).
var. <i>Witheringii</i> (Sm.).	Drumshoreland!; Whitburn!
<i>Aparine</i> Linn.	T.; W.; Bo'ness (Herb. Rec.)!; Dalmeny!;
	Linlithgow!; Kirkliston!; Society!
<i>Asperula odorata</i> Linn.	T.; W.; J.H.B.; Linlithgow (Herb. Rec.)!;
	Bathgate (St. Acc.); Carlowrie!;
	Carribber Glen!
<i>taurina</i> Linn. ^x	Hopetoun (Herb. Rec.; McT.C. in Ex. Cl.;
	Fraser; Evans)!
<i>Sherardia arvensis</i> Linn.	T.; W.; near Carlowrie!

XXXIII. VALERIANACEAE.

<i>Valeriana dioica</i> Linn.	T.; W.; Linlithgow (B. & S.; S.).
<i>officinalis</i> Linn.	T.; W.; Dalmeny Woods (Herb. Rec.; Bot.
	Soc. lists.)!; Hopetoun!; Kinneil!;
	Craigiehall!; Carribber!; Society!;
	Armadale!
<i>sambucifolia</i> Mikan.	T.
<i>pyrenaica</i> Linn. ^x	T.; Hopetoun (J.H.B.; I.B.B.)!;
	Linlithgow (B. & S.; S.); Abercorn
	(G.; Wernerian Soc. Rec.; B. & S.);
	Kirkliston (Herb. Rec.); Carlowrie
	(McT. C. in Ex. Cl.)!

<i>Kentranthus ruber</i> DC. ^x	T.
<i>Galerianella olitoria</i> Poll.	T.; W.; J.H.B.; Bo'nness (St. Acc.); Dalmeny!; Blackness!
var. <i>lasiocarpa</i> Reichb.	T.
<i>eriocarpa</i> Desv. ^x	Bo'nness (S.).

XXXIV. DIPSACEAE.

<i>Dipsacus fullonum</i> L. em. ^x	
Huds.	West from Hopetoun House (18th cent.rec.).
<i>Scabiosa Succisa</i> Linn.	T.; W.; Linlithgow!; Dalmeny!
<i>Columbæria</i> Linn.	T.; Carriden (S.).
<i>arvensis</i> Linn.	T.; W.; Banks of the Almond (Herb. Rec.); Linlithgow!; Kirkliston!; Bathgate!

XXXV. COMPOSITAE

<i>Eupatorium cannabinum</i> Linn.	Tod's Hill, Bo'nness (St. Acc.).
<i>Solidago Virgaurea</i> Linn.	T.; W.; Banks of Avon, Linlithgowshire (Herb. Rec.); Dalmeny!
<i>Bellis perennis</i> Linn.	T.; W.; Linlithgow!; Blackness!; Hopetoun!; Dalmeny!; Kirkliston!; Bathgate!; Whitburn!; Livingstone!
<i>Aster Tripolium</i> Linn.	W.; Abercorn (St. Acc.); Bo'nness (St. Acc.); Blackness!
<i>Filago minima</i> Fr.	T.; W.
<i>Gnaphalium uliginosum</i> Linn.	T.; W.; Kirkliston (B. & S.; S.)!; Linlithgow!
<i>sylvaticum</i> Linn.	T.; W.
<i>Pulicaria dysenterica</i> Gray	T.; Bo'nness (S.); Carribber (I.B.B.).
<i>Bidens cernua</i> Linn.	T.
<i>tripartita</i> Linn.	T.; W.; Linlithgow Loch (B. & S.; S.).

<i>Achillea Millefolium</i> Linn.	T.; W.; Banks of Almond near Drumshoreland (Herb. Rec.); Linlithgow!; Kirkliston!; Dalmeny!; Blackness!
<i>Ptarmica</i> Linn.	T.; W.; Livingstone!; Fauldhouse!; Drumshoreland!; Winchburgh!; near Bathgate!; Armadale!; Blackridge!; Whitburn!
<i>Anthemis arvensis</i> Linn.	T.; W.; Linlithgow (G.; B. & S.; S.; Herb. Rec.).
<i>Chrysanthemum segetum</i> Linn.	T.; W.
<i>Leucanthemum</i> Linn.	T.; W.; Kirkliston!; Cramond!; Linlithgow!
<i>Parthenium</i> Bernh. ^x	T.; W.
<i>macrophyllum</i> Waldst. & Kit. ^x	near Kirkliston (Fraser); near Dalmeny (Evans)!
<i>Metricaria inodora</i> Linn.	T.; W.; Carlowrie!; Society!; Linlithgow!; Kirkliston!
var. <i>salina</i> DC.	S. Queensferry!; Dalmeny!; Abercorn!; Inchgarvie!; Blackness!
<i>Chamomilla</i> Linn. ^x	T.
<i>suaveolens</i> Buchenau ^x	T.; Dundas!; S. Queensferry!; Linlithgow!
<i>Tanacetum vulgare</i> Linn.	T.; Banks of Almond (Herb. Rec.); S. Queensferry!; Cramond Bridge!
<i>Artemisia Absinthium</i> Linn. ^x	T.; W.; between Cramond & Queensferry (Herb. Rec.); Seaside near Hopetoun House (18th Cent. rec.); Linlithgow!; Carriden!; Bo'ness!; Kirkliston!
var. <i>vulgaris</i> Linn.	T.; W.; Carriden!; Kirkliston!
<i>Tussilago Farfara</i> Linn.	T.; W.; Craigiehall!; Carlowrie!; Dundas!
<i>Petasites fragrans</i> Presl. ^x	Kirkliston (Herb. Rec.); Carriden!
var. <i>ovatus</i> Hill.	T.; W.; near Niddry Castle (J.H.B.); Dalmeny!; Kirkliston!; Hopetoun!; Carribber!; Banks of the Almond!

<i>albus</i> Gaertn. ^x	T.; near Kirkliston (Fraser); near Dalmeny (Evans)!
<i>Doronicum Pardalianches</i> Linn. ^x	Woodcockdale (J.H.B.)!; Banks of Avon, Linlithgow (Herb. Rec.; J.B.); Stream near Livingstone (St. Acc.); Kirkliston!; Craigiehall!; Carlowrie!; Cramond!; Abercorn!
<i>plantagineum</i> Linn. ^x	T.; Kirkliston (Herb. Rec.; Fraser)!
<i>Senecio vulgaris</i> Linn.	T.; W.; Inchgarvie!; Linlithgow!; Bathgate!; Blackness!
<i>sylvaticus</i> Linn.	T.; near Drumshoreland (Herb. Rec.).
<i>viscosus</i> Linn.	T.; Bo'ness (Herb. Rec.)!; Dalmeny!; Almond at Carlowrie!
<i>Jacobaea</i> Linn.	T.; W.; Dalmeny!; Linlithgow!; Inchgarvie!; Whitburn!; Bathgate!
<i>aquaticus</i> Hill.	T.; W.
<i>sarracenicus</i> Linn. ^x	T.; Bathgate (B. & S.; S.; St. Acc.); Bot. Soc. lists.).
<i>(Arctium Lappa)</i> Linn.	T.; W.).
<i>nemorosum</i> Lej.	Linlithgow!; Cramond!; Dalmeny!
<i>minus</i> Bernh.	T.; W.
<i>Carduus pyenocephalus</i> Linn.	T.; Dalmeny!; Linlithgow!; Kirkliston!; Armadale!; Whitburn!; Blackridge!
<i>crispus</i> Linn.	T.; W.; J.H.B.; Craigiehall Woods (Herb. Rec.); Dalmeny!; Linlithgow!; Blackness!
<i>Cnicus lanceolatus</i> Willd.	T.; W.; Linlithgow (Herb. Rec.); Dalmeny!; Bathgate!
<i>eriphorus</i> Roth. ^x	T.; W.; seaside between Blackness & Queensferry (G.); Blackness (S.).
<i>palustris</i> Willd.	T.; W.; Dalmeny shore!; Drumshoreland!
<i>pratensis</i> Willd. ^x	T.
<i>heterophyllus</i> Willd.	W.; Armadale!; Westfield!

<i>arvensis</i> Hoffm.	T.; W.; Dalmeny!; Almond at Carlowrie!; Blackness!
var. <i>setosus</i> (Bess.) ^K	T.
<i>oleraceus</i> Scop. ^K	Cramond Bridge!
<i>Onopordum Acanthium</i> Linn.	T.; S. Queensferry (Herb. Rec.).
<i>entaurea pratensis</i> Thuill.	T.; W.; Linlithgow!; Kirkliston!; Bo'ness!; Armadale!; Winchburgh!
<i>Cyanus</i> Linn. ^K	T.; W.
<i>Cichorium Intybus</i> Linn. ^K	T.; Linlithgow (I.B.B.).
<i>Lapsana communis</i> Linn.	W.; Kirkliston!; Linlithgow!; S. Queensferry!; Bathgate!
<i>Crepis capillaris</i> Wallr.	T.; W.; S. Queensferry!; Almond at Carlowrie!
<i>paludosa</i> Moench.	T.; W.
<i>Hieracium Pilosella</i> Linn.	T.; W.; S. Queensferry!; Linlithgow!; Torphichen!; Bathgate!
<i>Aurantium</i> Linn. ^K	S. Queensferry!
<i>murorum</i> Linn.	T.; W.; Cramond!; Carribber!; Blackness!; Torphichen!; Armadale!; Bo'ness!; Carriden!
<i>sylvaticum</i> Sm.	T.
<i>umbellatum</i> Linn.	Bo'ness (St. Acc.); Hound's Point; Dalmeny (Fraser); near Carlowrie!; seaside west of Barnbogle Castle (18th. cent. rec.).
<i>sabaudum</i> Linn.	T.; W.; Dalmeny!; Drumshoreland!
<i>prenanthoides</i> Vill.	T.; W.; J.H.B.; G.; Cramond Bridge (B. & S.).
<i>strictum</i> Fr.	Woodcockdale (B. & S.).
<i>inuloides</i> Tausch	Banks of Avon, Linlithgow (Herb. Rec.); Woodcockdale Woods (Herb. Rec.).
<i>sagittatum</i>	
var. <i>lanuginosum</i> Lonr. T.	
<i>cydoniaefolium</i> Vill.	Cramond Bridge (S.).
<i>Hypochoeris radicata</i> Linn.	T.; W.; Linlithgow!; Drumshoreland!; Almond at Carlowrie!; Blackness!

<i>Leontodon hispidum</i> Linn.	T.
<i>autumnale</i> Linn.	T.; W.; Dalmeny!; Carriden!; Bathgate!
<i>Taraxacum vulgare</i> Schrank	W.; near Carlowrie!; Inchgarvie!;
	Linlithgow!; Bo'ness!; Blackness!;
	Bathgate!
<i>paludosum</i> Schlech.	T.; W.
<i>Lactuca muralis</i> Gaertn.	T.; W.; Hopetoun (J.B.)!; near
	S. Queensferry!
<i>Sonchus oleraceus</i> Linn.	T.; W.; Linlithgow!; Blackness!;
	Dalmeny!; S. Queensferry!; Inchgarvie!
<i>asper</i> Hill.	T.; W.; Linlithgow!; Blackness!;
	Dalmeny!; near Carlowrie!; Kirkliston!
<i>arvensis</i> Linn.	T.; W.; Winchburgh!
<i>Tragopogon pratensis</i> Linn.	T.; S. Queensferry!; Carlowrie!
<i>minus</i> Mill.	Dalmeny!; S. Queensferry!; Kirkliston!
<i>porrifolium</i> Linn.	Railway at S. Queensferry (Evans).

XXXVI. CAMPANULACEAE.

<i>Campanula latifolia</i> Linn.	T.; W.; Linlithgow!; Carlowrie!;
	Dalmeny!; Craigiehall!
<i>rotundifolia</i> Linn.	T.; W.; Linlithgow!; near Carlowrie!;
	Fauldhouse!; Hopetoun!; near
	Torphichen!; Bathgate.
<i>persicifolia</i> Linn.	T.; Fauldhouse (S.).

XXXVII. VACCINIACEAE.

<i>Vaccinium Myrtillus</i> Linn.	T.; W.; Fauldhouse!; Livingstone!;
	near Bathgate!; Armadale!; Blackridge!

XXXVIII. ERICACEAE.

<i>Calluna vulgaris</i> Hull	T.; W.; Linlithgow!; Bathgate!;
	Torphichen!; Armadale!; Drumshoreland!;
	Fauldhouse!

Erica Tetralix Linn.T.; W.; Drumshoreland!; Fauldhouse!;
Whitburn!; Armadale!*cinerea* Linn.T.; W.; Drumshoreland!; Linlithgow!;
Fauldhouse!*Pyrola minor* Linn.T.; W.; J.H.B.; Linlithgow (S.);
Craigiehall (Herb. Rec.); Newhall
(Wernerian Soc. Rec.); Livingstone
(St. Acc.); Cockleroi (J.B.).*secunda* Linn.?

T.; Bowness (S.).

XXXIX. PLUMBACINACEAE.*Armeria maritima* Willd.T.; W.; Blackness (J.H.B.)!;
Dalmeny!; Inchgarvie!XL. PRIMULACEAE.*Primula vulgaris* Huds.T.; W.; Dalmeny (Herb. Rec.);
Dundas!; Abercorn!; Carribber!*veris* Linn.T.; W.; J.H.B.; Dalmeny (B. & S.;
Herb. Rec.)!*Lysimachia thyrsiflora* Linn.T.; W.; J.H.B.; Canal near
Linlithgow (Herb. Rec.; Evans).*vulgaris* Linn.T.; W.; Carlowrie Woods (B. & S.; S.;
Herb. Rec.); Linlithgow (B. & S.;
S.; Herb. Rec.); Kirkliston (Evans).*Nummularia* Linn.

Carlowrie (Herb. Rec.)!

nemorum Linn.

T.; W.; Carlowrie!

Trientalis europaea Linn.

near Linlithgow!

Glaux maritima Linn.W.; Blackness (J.H.B.)!; Dalmeny
(Herb. Rec.; Bot. Soc. lists.)!

<i>Anagallis arvensis</i> Linn.	T.; W.; Carlowrie (B. & S.; S.).
<i>tenella</i> Murr.	T.; W.
<i>Samolus Valerandi</i> Linn.	T.; W.

XII. OLEACEAE

<i>Fraxinus excelsior</i> Linn.	T.; W.; J.H.B.; Dalmeny!; Hopetoun!
<i>Ligustrum vulgare</i> Linn.	T.; Dalmeny!; Carlowrie!; Cramond Bridge!; Torphichen!
<i>Syringa vulgaris</i> Linn.	Railway near Carlowrie!; Cramond Bridge!; Armadale!; Craigiehall!

XLII. APOCYNACEAE.

<i>Vinca major</i> Linn.	Dundas Hill (B. & S.; S.; Wernerian Soc. Rec.).
<i>minor</i> Linn.	T.; W.; near Linlithgow (Herb. Rec.).

XLIII. GENTIANACEAE

<i>Erythraea Centaurium</i> Pers.	T.; W.
<i>Gentiana campestris</i> Linn.	Society (18th. cent. rec.).
<i>Menyanthes trifoliata</i> Linn.	W.; near Linlithgow (J.H.B.); Dalmeny (Herb. Rec.; Bot. Soc. lists.).

XLIV. POLEMONIACEAE.

<i>Polemonium coeruleum</i> Linn.	T.; W.; Dalmeny (G.; Wernerian Soc. Rec.; B. & S.; S.; Herb. Rec.; Evans).
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XLV. BORAGINACEAE.

<i>Gnuglossum officinale</i> Linn.	T.; W.; Abercorn (St. Acc.).
<i>Asperugo procumbens</i> Linn.	T.; Kinneil (S.).
<i>Symphytum officinale</i> Linn.	T.; W.; Carriden (J.H.B.); Linlithgow (B. & S.; S.; Herb. Rec.; 18th Cent. rec.); Carlowrie!; Cramond!; Kirkliston!

<i>peregrinum</i> Ledeb. ^x	near Linlithgow (J. B.); Carlowrie (Fraser); Society (Fraser); River near Turnhouse (Evans).
<i>orientale</i> Linn. ^x	Carriden!
<i>tuberosu m</i> Linn.	T.; W.; Knock Hill (J.H.B.); S. Queensferry!; Carribber!; Kirkliston!; Cramond Bridge!; Hopetoun!
<i>Anchusa sempervirens</i> Linn. ^x	T.; Blackness (J.H.B.)!; Carlowrie!; Dundas!; Banks of the Almond near Cramond (Herb. Rec.); Dalmeny (Evans).
<i>Lycopsis arvensis</i> Linn. ^x	T.; W.; Dalmeny!; Kirkliston!; Blackness!
<i>Pulmonaria officinalis</i> Linn. ^x	T.; near Kirkliston (McT.C. in EX. CL.; Fraser; Evans.)!
<i>Myosotis cespitosa</i> Schultz	W.; J.H.B.; Hopetoun!; Fauldhouse!; Cramond Bridge!
<i>palustris</i> Hill	W.; near Kirkliston (Evans).
<i>arvensis</i> Hill	T.; W.; Kinneil!; Cramond Bridge!; Dundas!; Society!; Linlithgow!; Kirkliston!
<i>collina</i> Hoffm.	T.; W.; Dalmeny (B. & S.)!
<i>versicolor</i> Sm.	T.; W.; Dalmeny (Herb. Rec.); Kirkliston!; Livingstone!
<i>Lithospermum purpureo-</i> <i>coeruleum</i> Linn. ^x	T.; near Kirkliston (I.B.B.; Fraser; Evans).
<i>arvense</i> Linn.	T.; W.
<i>Echium vulgare</i> Linn. ^x	W.; near Carlowrie!
<i>Omphalodes verna</i> Moench ^x	T.; J.H.B.; Bo'ness (S.); Linlithgow (S.); Kirkliston (J.H.B.; Herb. Rec.; Fraser).
<i>Echinspermum lapula</i> ^x	near Philp'stoun (Evans).

XLVI. CONVOLVULACEAE.

- Calystegia sepium* Br. | T.; J.H.B.; Dundas Hill (B. & S.);
 | Abercorn (St. Acc.); Kirkliston!;
 | Linlithgow!
Convolvulus arvensis Linn. | W.; Kirkliston!; Blackness!; Dalmeny!;
 | S. Queensferry!

XLVII. SOLANACEAE.

- Solanum Dulcamara* Linn. | Bathgate (St. Acc.).
nigrum Linn. | T.; Bo'ness (S.).

XLVIII. SCROPHULARIACEAE.

- Verbascum Thapsus* Linn. | T.; W.; Hopetoun (J.H.B.; I.B.B.; J.B.;
 | 18th cent. rec.); Niddry Castle (J.H.B.);
 | Dalmeny Park (B. & S.; S.).
pulverulentum Vill. | T.
Linaria Cymbalaria Mill. | Hopetoun (J.H.B.)!; Dalmeny!;
 | Linlithgow!; S. Queensferry!
vulgaris Mill. | T.; W.; Dalmeny!; Bo'ness!; Linlithgow!;
 | Carriden!
minor Deaf. | T.; old railway line near Dalmeny
 | (McT. C. in Ex. Cl.)!; S. Queensferry!
Scrophularia aquatica Linn. | T.; W.; near Linlithgow (J.H.B.);
 | Herb. Rec.; Wernerian Soc. Rec.);
 | Cramond Woods (Bot. Soc. lists.);
 | Abercorn (St. Acc.); Craigiehall!; near
 | Hopetoun House (G.; B. & S.; S.; Herb. Rec.)
alata Gilib. | T.; W.; near Linlithgow (J.H.B.);
 | Banks of the Almond at Cramond Bridge
 | (B. & S.; S.; Herb. Rec.)!; Cramond
 | Woods (Herb. Rec.); Hopetoun (J.B.).

<i>nodosa</i> Linn.	W.; Banks of the Almond (S.; Herb. Rec.); Cramond!; Dalmeny!; Hopetoun!; Carriden!; Kirkliston!
<i>vernalis</i> Linn.	near Linlithgow (J.H.B.; Bot. Soc. lists)!; Carribber Castle (Herb. Rec.; Evans)!
<i>Timulus Langsdorffii</i> Donn	T.
<i>Digitalis purpurea</i> Linn.	W.; Dalmeny (Herb. Rec.)!; Carlowrie!; Dundas!; Hopetoun!
<i>onica hederæfolia</i> Linn.	T.; W.; near Linlithgow (J.H.B.); Craigiehall!; Blackness!
<i>polita</i> Fr.	T.; W.; Bo'ness (Herb. Rec.); Dalmeny!
<i>agrestis</i> Linn.	T.; W.; Society!; Kirkliston!
<i>persica</i> Poir.	Bo'ness (S.); Dalmeny!; Society!; Bathgate!
<i>arvensis</i> Linn.	W.; Dundas Hill (B. & S.); Carlowrie!; Hopetoun!; Kirkliston!; Dalmeny!; Blackness!; Carribber!
<i>serpyllifolia</i> Linn.	T.; W.; near Linlithgow (J.H.B.); Craigiehall!; Abercorn!
<i>officinalis</i> Linn.	W.; near Linlithgow (J.H.B.)!; Dalmeny!; (Herb. Rec.)!; Carribber!; Armadale!
<i>Chamaedrys</i> Linn.	T.; W.; Dalmeny!; Kirkliston!; Inchgarvie!; Linlithgow!; Bathgate!; Fauldhouse!
<i>montana</i> Linn.	Bo'ness (St. Acc.).
<i>scutellata</i> Linn.	J.H.B.; Philpstoun Loch (Herb. Rec.); Whitburn!
<i>Anagallis-aquatica</i> Linn.	T.; J.H.B.
<i>Beccabunga</i> Linn.	T.; W.; near Linlithgow (J.H.B.)!; Carribber!; Blackness!; Dalmeny!; Armadale!
<i>uphrasia officinalis</i> Linn.	T.; W.; Linlithgow!; Blackness!; Bathgate!

<i>Bartsia Odontites</i> Huds.	T.; W.
<i>Pedicularis palustris</i> Linn.	T.; W.; Linlithgow (Herb. Rec.); Dalmeny!
<i>sylvatica</i> Linn.	T.; W.; Carribber (Evans)!
<i>Rhinanthus minor</i> Ehrh.	T.; W.; J.H.B.; Linlithgow!; Craigiehall!; Carlowrie!; Carribber!; Armadale!; Bathgate!
<i>Melampyrum pratense</i> Linn.	T.; W.

XLIX. LENTISULARIACEAE.

<i>Pinguicula vulgaris</i> Linn.	T.; W.; Linlithgow (Herb. Rec.); Bathgate (St. Acc.).
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L. LABIATAE.

<i>Mentha alopecuroides</i> Hull	Riverbank near Turnhouse (Evans).
<i>longifolia</i> Huds.	J.H.B.
<i>viridis</i> Linn.	Riverbank near Turnhouse (Evans); Linlithgow!
<i>piperita</i> Linn.	T.
<i>aquatica</i> Linn.	W.; Hopetoun!; Drumshoreland!; Dalmeny!; Cramond Bridge!; Kinneil!; Blackness!
x <i>arvensis</i> (sativa Linn.)	T.; Dalmeny!
var. <i>paludosa</i> (Sole)	T.; Carriden Glen (S.).
<i>gentilis</i> Linn.	Riverbank near Turnhouse (Evans).
<i>arvensis</i> Linn.	T.; W.; Dalmeny!
<i>Lycopus europaeus</i> Linn.	T.; W.; S. Queensferry (Fraser)!
<i>Origanum vulgare</i> Linn.	T.; W.; Linlithgow (Herb. Rec.); Bo'ness (St. Acc.); Cramond Woods (Bot. Soc. lists); Dalmeny!; Almond at Kirkliston!; Carribber (Evans).
<i>Thymus Serpyllum</i> Linn.	T.; W.; Linlithgow!; Bathgate!
<i>Clinopodium vulgare</i> Linn.	T.; W.; Woodcockdale (S.).
<i>Nepeta hederacea</i> Trev.	T.; W.; Bathgate (St. Acc.)!; Kirkliston (Herb. Rec.)!; Dalmeny!; Abercorn!; Kinneil!

<i>Scutellaria galericulata</i> Linn.	T.; Dundas Hill (G.; B. & S.; J.H.B.; Herb. Rec.); Linlithgow (I.B.B.).
<i>Prunella vulgaris</i> Linn.	T.; W.; Kinneil!; S. Queensferry!; Blackridge!; Bathgate!; Kirkliston!
<i>Marrubium vulgare</i> Linn.	Hopetoun (J.H.B.).
<i>Stachys officinalis</i> Trev.	T.; W.; Dundas Hill (B. & S.; S.); Kinneil Wood (Herb. Rec.; St. Acc.); S. Queensferry (Herb. Rec.); Road to Hopetoun House from Craigiehall (18th cent rec.).
<i>palustris</i> Linn.	T.; W.; Almond at Carlowrie!; Dalmeny!
<i>sylvatica</i> Linn.	T.; W.; Dalmeny!; Kirkliston!; Linlithgow!; Hopetoun!
<i>arvensis</i> Linn.	T.; W.
<i>Galeopsis speciosa</i> Mill.	T.
<i>intermedia</i> Vill.	Riverside near Turnhouse (Evans).
<i>Tetrahit</i> Linn.	T.; W.; Almond at Carlowrie!; Blackridge!; Kirkliston!
<i>Lamium amplexicaule</i> Linn.	T.; W.; Blackness!; Kirkliston!
<i>mollucellifolium</i> Fr.	T.; J.H.B.
<i>hybridum</i> Vill.	W.; Roadside near Linlithgow (Herb. Rec.); Roadside between S. Queensferry & Kirkliston (Herb. Rec.).
<i>purpureum</i> Linn.	T.; W.; Bo'ness (Herb. Rec.); Linlithgow; (Herb. Rec.); Carlowrie!; Kirkliston!; Cramond Bridge!; Bathgate!
<i>maculatum</i> Linn.	T.; near Winchburgh (Evans); Kirkliston (Evans)!
<i>album</i> Linn.	T.; W.; Carlowrie!; Cramond Bridge!; Linlithgow!; Bathgate!; Dalmeny!
<i>Galeobdolon Crantz</i>	Carlowrie Woods (Herb. Rec.); Dalmeny (Evans).
<i>Ballota nigra</i> Linn.	Dalmeny (Bot. Soc. lists; Herb. Rec.); Hopetoun (J.B.).
<i>Teucrium Scorodonia</i> Linn.	T.; W.; Carlowrie!; Cramond!; Dundas!; Dalmeny!; Carribber!; Torphichen!

Ajuga reptans Linn. T.; W.; Carribber!

II. PLANTAGINACEAE.

Plantago Coronopus Linn. T.; W.; J.H.B.; Dalmeny!; Inchgarvie!

maritima Linn. T.; W.; J.H.B.; Blackness!; Society!;
Dalmeny!

lanceolata Linn. T.; W.; Inchgarvie!; Blackness!;
Dalmeny!; Linlithgow!; Bathgate!;
Blackridge!; Kirkliston!; Bo'ness!;
Whitburn!; Broxburn!

major Linn. T.; W.; Torphichen!; Blackness!;
Linlithgow!; Kirkliston!; Bathgate!

Littorella uniflora Aschers. W.; Reservoir at Hopetoun House (Herb.
Rec.); Philpstoun Loch (Herb. Rec.);
I.B.B.; J.B.).

LII. ILLECEBRACEAE.

Scleranthus annuus Linn. T.; W.; Kirkliston (B. & S.); Bo'ness
(Herb. Rec.).

LIII. CHENOPODIACEAE.

Chenopodium album Linn. T.; W.; Philpstoun (Evans).

hybridum Linn. T.; Kinneil (S.).

Bonus-Henricus Linn. T.; W.; J.H.B.; Cramond Bridge!

Beta maritima Linn. T.; W.

Atriplex littoralis Linn. T.; W.; S. Queensferry (Herb. Rec.)!;
Dalmeny (Herb. Rec.; St. Acc.)!

var. marina (Linn.) Shore near Dalmeny (Evans).

patula Linn. T.; W.; Bo'ness (Herb. Rec.); Society!;
Kirkliston!; Linlithgow!; Winchburgh!;
Dundas!

hastata Linn. Kirkliston!; Dalmeny!

glabriuscula Edmondston T.; W.; Dalmeny (St. Acc.)!; S.
Queensferry!; Hopetoun!

Either - *Salicornia stricta* Dum. or *S. dolichostachya* Moss has been recorded as *S. herbacea* by Watson.

<i>Suaeda maritima</i> Dum.	T.; W.
<i>Salsola Kali</i> Linn.	T.; W.

LIV. POLYGONACEAE.

<i>Polygonum Convolvulus</i> Linn.	T.; W.; near Woodcockdale House (Herb. Rec.; B. & S.); Bathgate!
<i>heterophyllum</i> Lindman	T.; W.; Kirkliston!; Dalmeny!; Carlowrie!; Blackness!; S. Queensferry (Evans); Blackridge!
<i>Hydropiper</i> Linn.	T.; W.; Linlithgow Loch (B. & S.).
<i>Persicaria</i> Linn.	T.; W.; Dalmeny!; near Carlowrie!; Linlithgow!
<i>lapathifolium</i> Linn. x	T.
<i>amphibium</i> Linn.	T.; W.; Carlowrie!; Linlithgow!; Kinneil!; Blackness!
<i>Bistorta</i> Linn.	T.; W.; Bathgate (St. Acc.); Carlowrie!
<i>cuspidatum</i> Sieb. & Zucc. x	Hopetoun (Evans); Dalmeny!; Linlithgow! Cramond!
<i>Rumex glomeratus</i> Schreb.	T.; W.; Cramond!; Dundas!
<i>condylodes</i> Bieb.	T.; Hopetoun Woods (Bot. Soc. lists)!; Dalmeny!; S. Queensferry!
<i>sanguineus</i> Linn. x	T.; W.; Abercorn (B. & S.; S.)!; Dalmeny (St. Acc.); Hopetoun Woods (Bot. Soc. lists).
<i>obtusifolius</i> Linn.	T.; W.; near Linlithgow (J.H.B.)!; Society!; Bathgate!; Kirkliston!; Dalmeny!
<i>crispus</i> Linn.	T.; W.; Blackness (Herb. Rec.); Dalmeny!; Carlowrie!; Society!; Inchgarvie!
<i>longifolius</i> DC.	T.; W.

<i>Acetosa</i> Linn.	T.; W.; Drumshoreland!; Hopetoun!;
	Kirkliston!; Dalmeny!; Inchgarvie!
<i>Acetosella</i> Linn.	T.; W.; Dalmeny!; Blackness!;
	Bathgate!; Linlithgow!

LV. ARISTOLOCHACEAE.

<i>Asarum europaeum</i> Linn.	T.; W.; West Binnv near Linlithgow
	(B. & S.; S.).
<i>Aristolochia Clematitis</i> Linn.	near Linlithgow (S.).

LVI. THYMELEACEAE.

<i>Daphne Laureola</i> Linn.	T.; Dalmeny!
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LVII. ELAEAGNACEAE.

<i>Hippophae Rhamnoides</i> Linn.	T.; W.; Hopetoun!
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LVIII. EUPHORBIACEAE.

<i>Euphorbia Helioscopia</i> Linn.	T.; W.; Kirkliston (Herb. Rec.)
	Bot. Soc. lists); Blackness!
<i>Esula</i> Linn.	T.; Abercorn (B. & S.; S.; St. Acc.;
	Wernerian Soc. Rec.).
<i>Cyparissias</i> Linn.	Port Edgar (Evans).
<i>portlandica</i> Linn.	T.; near Whitburn (Herb. Rec.).
<i>Peplus</i> Linn.	T.; W.
<i>exigua</i> Linn.	T.; near Dalmeny (Fraser); between
	Craigiehall and Hopetoun House
	(18th cent. rec.).
<i>Buxus sempervirens</i> Linn.	Dundas!; Hopetoun!; Dalmeny!
<i>Mercurialis perennis</i> Linn.	T.; W.; Linlithgow (Herb. Rec.)!;
	Cramond!; Dalmeny!; Kinneil!;
	Hopetoun!; Carlowrie!

LIX. URTICACEAE.

<i>Ulmus montana</i> Stokes	T.; W.; Dalmeny Park (Herb. Rec.)!;
	Hopetoun!; Kinneil!

^x Humulus Lupulus Linn.	W.; Dalmeny (Fraser); near Bathgate!
Urtica dioica Linn.	W.; Kirkliston (Herb. Rec.)!; Dalmeny!; Hopetoun!; Linlithgow!; Bathgate!; Livingstone!; Inchgarvie!
urens Linn.	W.; Kirkliston (Herb. Rec.); Dalmeny!; Cramond Bridge!
Parietaria ramiflora Moench	Linlithgow Palace (J.H.B.).

IX. MYRICACEAE.

Myrica Gale Linn.	T.; W.; Dalmeny!; Kinneil!
^{IXI.} Betula alba Linn.	<u>CUPULIFERAE.</u> Dalmeny!; Drumshoreland!; Kinneil!
Alnus rotundifolia Mill.	T.; W.; Dalmeny!; Hopetoun!; Kirkliston!; Linlithgow!
Corylus Avellana Linn.	W.; Hopetoun!; Dalmeny!; Kinneil!
Quercus Robur Linn.	T.; W.; Hopetoun (B. & S.; J.H.B.)!; Dalmeny (Herb. Rec.)!; Cramond Bridge!; Kirkliston!; Kinneil!
^x Castanea sativa Mill.	T.; Hopetoun (B. & S.; J.H.B.); Kirkliston!
^x Fagus sylvatica Linn.	T.; W.; Hopetoun (B. & S.)!; Dalmeny Herb. Rec.)!; Kirkliston!; Drumshoreland!; Kinneil!

IXII. SALICACEAE.

Salix pentandra Linn.	T.; W.; Kirkliston (B. & S.); Carlowrie (B. & S.); near Whitburn 18th cent. rec.); Drumshoreland (Herb. Rec.) Kinneil!
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<i>triandra</i> Linn.	Hopetoun (Herb. Rec.); Almond near Carlowrie!
<i>fragilis</i> Linn.	T.; W.; J.H.B.; Linlithgow (B. & S.; Herb. Rec.); Almond near Carlowrie!; Hopetoun!; Craigiehall!
<i>alba</i> Linn.	T.; J.H.B.; Linlithgow (Herb. Rec.); Cramond (S.); Kirkliston!
<i>x fragilis</i> (viridis Fries)	T.
<i>purpurea</i> Linn.	T.; W.
form <i>Lambertiana</i> (Sm.)	near Kirkliston (B. & S.).
<i>x viminalis</i> (rubra Huds.)	T.
<i>viminalis</i> Linn.	T.; W.; J.H.B.; Dalmeny (B. & S.); Almond near Carlowrie!
<i>aurita</i> Linn.	T.; W.
<i>caprea</i> Linn.	T.; W.; Dalmeny!; Hopetoun!; Linlithgow!; S. Queensferry!; Carribber!; Kinneil!; near Carlowrie!; Kirkliston!
<i>cinerea</i> Linn.	T.; W.; Linlithgow!; Hopetoun!; Kinneil!; Almond near Carlowrie!; Armada!; Dalmeny!
<i>x viminalis</i> (<i>Smithiana</i> Willd.)	T.; W.; J.H.B.; Linlithgow (B. & S.).
form <i>ferruginea</i> (G. And.)	T.
<i>repens</i> Linn.	T.; Drumshoreland Moor (B. & S.); Carribber (Evans)!; Linlithgow!
<i>Andersoniana</i> Sm.	Carlowrie (Herb. Rec.).
<i>phylicifolia</i> Linn.	T.
<i>Populus Alba</i> Linn. ^x	T.; Dalmeny (B. & S.)!
<i>tremula</i> Linn. ^t	Drumshoreland!; Dalmeny!
<i>nigra</i> Linn. ^x	T.

LXIII. CERATOPHYLLACEAE.

<i>Ceratophyllum demersum</i> Linn.	T.; W.; Linlithgow Loch (Herb. Rec.).
<i>submersum</i> Linn.	T.; J.H.B.; Linlithgow Loch (B. & S.; S.).

LXIV. HYDROCHARIDACEAE.

<i>Elodea canadensis</i> Michx.	T.; J.H.B.; Linlithgow (Herb. Rec.)!
<i>Stratiotes Aloides</i> Linn.	T.; Linlithgow Loch (S.).

LXV. ORCHIDACEAE.

<i>Neottia Nidus-avis</i> Rich.	T.; W.; Cramond Woods (Herb. Rec.; Bot. Soc. lists.); Craigiehall Woods (Herb. Rec.); Kinneil (St. Acc.); Hopetoun (Evans)!
<i>Listera ovata</i> Br.	T.; W.; Hopetoun (J.H.B.)!; Dalmeny (B. & S.; Herb. Rec.); near Kirkliston (Herb. Rec.); Wood north of Livingstone (St. Acc.).
<i>Goodyera repens</i> Br.	T.; W.; Dalmeny (Evans).
<i>Epipactis latifolia</i> Sm.	T.; W.; J.H.B.; Dalmeny (B. & S.; S.; Herb. Rec.; Bot. Soc. lists.); Woodcockdale (B. & S.; S.); Carribber Castle (Herb. Rec.; Evans).
<i>purpurata</i> Sm. (probably <i>latifolia</i>).	T.(?); W.
<i>Orchis mascula</i> Linn.	T.; W.; J.H.B.; Dalmeny (B. & S.; Herb. Rec.)!; Almond near Craigiehall!; Armadale!
<i>incarnata</i> Linn.	T.; W.
<i>latifolia</i> Linn.	T.; W.; Dalmeny (Herb. Rec.).
<i>Fuchsii</i> Druce	T.; W.; Linlithgow (Herb. Rec.)!; Blackness!; Carribber!; Dalmeny!; Armadale!; Westfield!

<i>Gymnadenia conopsea</i> Br.	T.; W.; J.H.B.
<i>Leucorchis albida</i> Mey.	near Whitburn (G.; B. & S.; S.); Kinneil (St. Acc.).
<i>Ophioglossum viride</i> Hartm.	T.; W.; J.H.B.; Abercorn (St. Acc.).
<i>Platanthera bifolia</i> Reich.	T.; W.; J.H.B.; Livingstone (St. Acc.); Bathgate (St. Acc.); Abercorn (St. Acc.).
<i>Chlorantha</i> Reich.	T.; W.; J.H.B.; Linlithgow (Herb. Rec.); Westfield!

LXVI. IRIDACEAE.

<i>Irish Pseudacorus</i> Linn.	W.; Bathgate (St. Acc.); near Niddry Castle (J.H.B.); Linlithgow (Herb. Rec.); Cockleroi (J.B.); Dalmeny!; Kirkliston!; Whitburn!
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LXVII. AMARYLLIDACEAE.

<i>Narcissus poeticus</i> Linn. x	Almond at Carlowrie!
<i>Galanthus nivalis</i> Linn. x	Carlowrie!; Dalmeny (Herb. Rec.; St. Acc.).

LXVIII. DIOSCOREACEAE.

<i>Tamus communis</i> Linn. x	Kirkliston (Herb. Rec.).
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LXIX. LILIACEAE.

<i>Lygonatum multiflorum</i> All. x	T.; Kirkliston (Herb. Rec.; Fraser)!; Dalmeny (Evans); Armadale!
<i>Aianthemum bifolium</i> Schmidt. x	T.; W.; Kirkliston (Herb. Rec.; J.C. in Ex. Cl.)!; "Linlithgowshire" (Evans; Fraser).
<i>Convallaria majalis</i> Linn. x	T.; J.H.B.; Carlowrie!
<i>Allium vineale</i> Linn. x	T.; W.
<i>oleraceum</i> Linn. x	T.; Roadside at Crlowrie (Fraser).

<i>carinatum</i> Linn. ^x	Roadside near Carlowrie Castle (McT.C. in Ex. Cl.)!;
<i>Schoenoprasum</i> Linn.	"Linlithgowshire" (Fraser).
<i>ursinum</i> Linn.	W.; J.H.B.
<i>paradoxum</i> Don ^x	T.; W.; Dalmeny!; Hopetoun!;
	Craigiehall!
<i>Scilla non-scripta</i> Hoffmngg. & Link	T.; J.H.B.; Binny Craig Woods (Herb. Rec.); Carlowrie (I.B.B.; Fraser)!; Craigiehall!
<i>Ornithogalum umbellatum</i> Linn. ^x	W.; Dalmeny (B. & S.)!; Hopetoun!;
<i>Lilium Martagon</i> Linn. ^x	Kinneil!; Carribber!; Craigiehall!
<i>Tulipa sylvestris</i> Linn. ^x	near Kirkliston (Fraser)!; Dalmeny (Evans).
<i>Gagea lutea</i> Gawler	near Linlithgow (J.H.B.); Dalmeny (J.H.B.).
<i>Narthecium ossifragum</i> Huds.	T.; Binny Craig near Linlithgow (B. & S.; S.; J. H. B.);
<i>Paris quadrifolia</i> Linn. ^x	"Linlithgowshire" (Fraser);
<i>Smilacina stellata</i> Desf. ^x	Midhope (I.B.B.); Carlowrie!
	T.; W.; Carlowrie (B. & S.; S.).
	T.; W.; Fauldhouse!; Whitburn!;
	Blackridge!
	Bathgate (St. Acc.); Linlithgow (T.B.C)
	"A Wood in Linlithgowshire" (Fraser; Evans).

LXX. JUNCACEAE.

<i>Juncus bufonius</i> Linn.	T.; W.; Blackness!
<i>squarrosus</i> Linn.	T.; W.; Linlithgow!; Fauldhouse!;
	Whitburn!; Armadale!; Blackridge!;
	Bathgate!
<i>compressus</i> Jacq.	T.
<i>Gerardi</i> Lois.	T.; W.; Sea coast below Hopetoun House (Herb. Rec.); Blackness!;
	Dalmeny!

<i>inflexus</i> Linn.	T.; W.; Coast at Abercorn (Herb. Rec.); Blackness!; Cramond!
<i>effusus</i> Linn.	T.; W.; Blackness!; Blackridge!; Drumshoreland!
<i>conglomeratus</i> Linn.	T.; W.; Linlithgow!; Blackness!; Bathgate!; Fauldhouse!
<i>maritimus</i> Lam.	T.; Bo'ness (S.).
<i>bulbosus</i> Linn.	T.; W.
<i>subnodulosus</i> Schrank	T.(?); ditches in Abercorn Park near fishpond (G.).
<i>articulatus</i> Linn.	T.; W.; Abercorn Park (G.); Linlithgow!; Armadale!; Blackridge!; Blackness!; Bathgate!
<i>sylvaticus</i> Reich.	T.; W.
<i>Luzula pilosa</i> Willd.	T.; W.; Drumshoreland!; Kinneil!
<i>sylvatica</i> Gaud.	T.; W.; Carribber!; Craigiehall!
<i>campestris</i> DC.	T.; W.; Linlithgow!; Dalmeny!; Carribber!; Kirkliston!; Whitburn!; Fauldhouse!
<i>multiflora</i> DC.	T.; Carribber (Evans)!
var. <i>congesta</i> (Lej.)	W.; Linlithgow (B. & BS.).

LXXI. TYPHACEAE.

<i>Typha latifolia</i> Linn.	T.; W.; near Binns (J.H.B.; B. & S.; S.; Herb. Rec.); Philpstoun Loch (J.B.); Dundas!
<i>Sparganium ramosum</i> Linn.	T.; W.; near Binns (J.H.B.); Canal at Carribber (Evans); Whitburn!; Westfield!
<i>simplex</i> Huds.	T.
<i>angustifolium</i> Michx.	W.; Philpstoun Loch (I.B.B.).

LXXII. ARACEAE.

Arum maculatum Linn.	T.; Linlithgow (S.); Kirkliston (Herb. Rec.); Kinneil (St. Acc.); Hopetoun!; Carlowrie!; Craigiehall!; Abercorn!
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Acorus Calamus Linn.	T.
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LXXIII. LEMNACEAE.

Lemna trisulca Linn.	Between S. Queensferry & Port Edgar (Evans).
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minor Linn.	T.; W.; Craigiehall Wood!; Linlithgow!; near Bathgate!; Blackness!
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gibba Linn.(?).	T.; Linlithgow (S.).
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polyrrhiza Linn.	T.; W.
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LXXIV. ALISMACEAE.

a Plantago-aquatica Linn.	T.; W.; Linlithgow Loch (B. & S.; Herb. Rec.)!; Cramond Bridge!; Hopetoun!; Bo'ness (Herb. Rec.); Whitburn!
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ranunculoides Linn.	Philpstoun Loch (Herb. Rec.; I.B.B.).
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Butomus umbellatus Linn.	T.; Linlithgow (S.).
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LXXV. NAIADACEAE.

Triglochin palustre Linn.	T.; W.; J.H.B.
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maritimum Linn.	T.; W.; Blackness (J.H.B.; Herb. Rec.)!; Dalmeny (Herb. Rec.)!; Abercorn (St. Acc.).
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Potamogeton natans Linn.	T.; W.; Canal near Linlithgow (Herb. Rec.)!; Whitburn !; Westfield!
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polygonifolius Pourr.	T.; W.
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alpinus Balb.	Bo'ness (S.).
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heterophyllus Schreb.	Linlithgow (S.); Kinneil (I.B.B.).
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<i>angustifolius</i> Bercht. & Presl.	T.; W.
<i>praelongus</i> Wulf.	Canal near Linlithgow!
<i>perfoliatus</i> Linn.	T.; W.; J.H.B.; Canal near Linlithgow (Herb. Rec.).
<i>crispus</i> Linn.	T.; W.; Canal near Linlithgow (J.H.B.); Dundas Pond!
<i>obtusifolius</i> Mert. & Koch.	T.; W.
<i>pusillus</i> Linn.	T.; W.; J.H.B.; Philpstoun Loch (Herb. Rec.); Kinneil (I.B.B.).
<i>pectinatus</i> Linn.	T.; W.; Linlithgow Loch (Herb. Rec.; I.B.B.); Canal at Linlithgow!
<i>filiformis</i> Pers.	Linlithgow Loch!

LXXVI. CYPERACEAE.

<i>Scheuchzeria palustris</i> Roem. & Schult.	T.; W.; Blackness!; Drumshoreland!
<i>unglumis</i> Schultes	T.; W.; Blackness (J.H.B.; B. & S.; S.; Herb. Rec.); Linlithgow (S.).
<i>multicaulis</i> Sm.	T.; W.; Blackness (J.H.B.; B. & S.; S.).
<i>Scirpus pauciflorus</i> Lightf.	T.; W.; J.H.B.; Dalmeny (B. & S.).
<i>caespitosus</i> Linn.	T.; W.; J.H.B.; Fauldhouse!; Blackness!; Dalmeny!; Blackridge!; Whitburn!
<i>setaceus</i> Linn.	T.; W.; Carribber!
<i>lacustris</i> Linn.	Fauldhouse!; Blackness Castle (Herb. Rec.).
<i>maritimus</i> Linn.	T.; W.; J.H.B.; Blackness (Herb. Rec.; Evans!; S. Queensferry (Herb. Rec.); West from Hopetoun House (Herb. Rec.); Dalmeny (Herb. Rec.; Bot. Soc. lists; St. Acc.)!; Bo'ness (St. Acc.).

<i>sylvaticus</i> Linn.	Blackness (J.H.B.); Banks of the Almond at Cramond Bridge (B. & S.; Herb. Rec.; Bot. Soc. Lists); Tod's Mill, Bo'ness (St. Acc.); Hopetoun!
<i>rufus</i> Schrad.	T.; W.; J.H.B.; Dalmeny (B. & S.; Herb. Rec.; Bot. Soc. lists); Blackness (Herb. Rec.; Evans).
<i>Eriophorum vaginatum</i> Linn.	T.; Fauldhouse!; Whitburn!; Armadale!; Blackridge!
<i>angustifolium</i> Roth	T.; W.; Linlithgow (Herb. Rec.); Fauldhouse!; Blackness!; Blackridge!; Whitburn!
<i>Carex dioica</i> Linn.	T.; W.
<i>pulicaris</i> Linn.	T.; W.
<i>incurva</i> Lightf.	T. (?)
<i>disticha</i> Huds.	T.; W.
<i>arenaria</i> Linn.	T.; W.; Dalmeny!
<i>diandra</i> Schrank	T.; W.; Dundas Hill (G.; B. & S.); Kirkliston (B. & S.).
<i>paniculata</i> Linn.	T.; W.; Dundas Hill (S.).
<i>vulpina</i> Linn.	T.; W.; Dalmeny (B. & S.; Bot. Soc. lists; St. Acc.); Blackness!
<i>Pairaei</i> F. Schultz	W.; S. Queensferry (B. & S.; S.).
<i>echinata</i> Murr.	W.; Fauldhouse!; Armadale!; Blackridge!
<i>remota</i> Linn.	Cramond Bridge!
<i>canescens</i> Lightf.	T.; W.; Bo'ness (St. Acc.); Fauldhouse!; Blackridge!
<i>leporina</i> Linn.	T.; W.; near Torphichen!; Fauldhouse!; Armadale!; Blackridge!; Dalmeny!

<i>Hudsonii</i> Ar. Bern.	T.(?); W.; Linlithgow Bridge (B. & S.).
<i>gracilis</i> Curt.	T.(?); W.
<i>aquatilis</i> Wahl.	T.; W.
<i>Goodenovii</i> Gay	T.; W.; Linlithgow!; Fauldhouse!; Blackness!; Kinneil!; near Bathgate!
<i>diversicolor</i> Crantz	T.; W.; Dalmeny (B. & S.); Carribber!
<i>limosa</i> Linn.	T.; W.
<i>pilulifera</i> Linn.	T.; W.; Waterworks at Linlithgow (Evans)
<i>carvophyllea</i> Latour.	T.; W.; Blackness!
<i>pallescent</i> Linn.	near Factor's house, Dalmeny (Herb. Rec.); Carribber!
<i>panicea</i> Linn.	T.; W.; Whitburn!; Dalmeny!; Armada!; Blackridge!
<i>pendula</i> Huds.	T.; W.
<i>sylvatica</i> Huds.	W.; Bathgate!
<i>binervis</i> Sm.	W.; Linlithgow!
<i>distans</i> Linn.	T.; Kinneil (S.); Blackness (Templeman in Ex. Cl.).
<i>fulva</i> Host.	T.; W.
x <i>flava</i>	W.
<i>flava</i> Linn.	T.; W.
x <i>Oederi</i>	Blackness!
<i>lepidocarpa</i> Tausch.	W.
<i>hirta</i> Linn.	W.
<i>inflata</i> Huds.	T.; W.

LXXVII. GRAMINEAE

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<i>alaris canariensis</i> Linn.	T.; near Linlithgow (J.B.).
<i>arundinacea</i> Linn.	T.; W.; Bo'ness (St. Acc.); Linlithgow!; Hopetoun!
<i>anthoxanthum odorata</i> Linn.	T.; W.; Dalmeny (Herb. Rec.); Linlithgow!; Kinneil!; Carribber!; Bathgate (St. Acc.); Kirkliston!

<i>Peperurus geniculatus</i> Linn.	T.; W.; J.H.B.; Linlithgow!; Dalmeny!
<i>pratensis</i> Linn.	T.; W.; Dalmeny (Herb. Rec.)!; Linlithgow!; Kinneil!
<i>Milium effusum</i> Linn.	T.; W.; Linlithgow (Herb. Rec.); Bo'ness (St. Acc.); Winchburgh!
<i>Phleum pratense</i> Linn.	T.; W.; Linlithgow!; Blackness!; Whitburn!
<i>Agrostis canina</i> Linn.	T.; W.; Drumshoreland Moor (Herb. Rec.); Linlithgow!
<i>alba</i> Linn.	T.; W.; Bathgate!; Fauldhouse!; Armadale!; Linlithgow!
var. <i>stolonifera</i> (Linn.)	Linlithgow!
<i>tenuis</i> Sibth.	T.; W.
<i>Ammophila arenaria</i> Link	T.; W.; Coast 2 miles east of S. Queensferry (G.)!; Bo'ness (St. Acc.).
<i>Aira carvophyllea</i> Linn.	T.; W.; Hopetoun (Herb. Rec.)!; Dalmeny!
<i>praecox</i> Linn.	T.; W.; Dalmeny!; Cockleroi!; near Carlowrie!; Inchgarvie!
<i>Elymus caespitosa</i> Beauv.	T.; W.; Drumshoreland!; Linlithgow!; Cramond!; Bathgate!; Whitburn!
<i>flexuosa</i> Trin.	T.; W.; Linlithgow!; Whitburn!; Fauldhouse!; Bathgate!
<i>Holcus mollis</i> Linn.	T.; W.; S. Queensferry!; Armadale!; Bathgate!
<i>lanatus</i> Linn.	T.; W.; Linlithgow!; Hopetoun!; Dalmeny!; Inchgarvie!; Bathgate!
<i>Poa flavescens</i> Beauv.	T.; Linlithgow!; S. Queensferry!; near Kirkliston!

<i>Avena pubescens</i> Huds.	T.; W.; Dalmeny (B. & S.).
<i>pratensis</i> Linn.	T.; W.; Almond near Drumshoreland (Herb. Rec.).
<i>fatua</i> Linn. ^x	W.; S. Queensferry!
<i>Arrhenatherum elatius</i> Mert. & Koch	T.; W.; Dalmeny!; Linlithgow!; Cramond!
<i>Sieglingia decumbens</i> Bernh.	T.; W.
<i>Phragmites communis</i> Trin.	T.; W.; Linlithgow Loch!; Armadale!; Dalmeny!
<i>Cynosurus cristatus</i> Linn.	T.; W.; Linlithgow!; Blackness!; Whitburn!; Bathgate!; Armadale!
<i>Koeleria gracilis</i> Pers. var. <i>britannica</i> Domin.	Bo'ness (St. Acc.).
<i>Molinia coerulea</i> Moench	T.; W.
<i>Melica nutans</i> Linn.	T.; W.; Linlithgow (Herb. Rec.)!; Tod's Mill, Bo'ness (St. Acc.).
<i>uniflora</i> Retz.	T.; W.; Linlithgow (Herb. Rec.)!
<i>Dactylis glomerata</i> Linn.	T.; W.; Bo'ness (Herb. Rec.)!; Banks of Almond (Herb. Rec.)!; Inchgarvie!; Linlithgow!; Bathgate!; Kirkliston!; Fauldhouse!; Dalmeny!
<i>Briza media</i> Linn.	W.; Dalmeny (Bot. Soc. lists); Linlithgow!; Blackness!; Carribber!
<i>Poa annua</i> Linn.	T.; W.; Blackness!; Hopetoun!; Dalmeny!; Linlithgow!; Kirkliston!; Bathgate!; Fauldhouse!
<i>nemoralis</i> Linn.	T.; Cramond!; Dalmeny!; Linlithgow!
<i>pratensis</i> Linn.	T.; W.; Linlithgow!; Hopetoun!; Inchgarvie!
var. <i>subcoerulea</i> (Sm.)	T.
<i>trivialis</i> Linn.	T.; W.; Dalmeny (Herb. Rec.; Bot. Soc. lists)!; Linlithgow!

<i>Glyceria fluitans</i> Br.	T.; W.; Linlithgow!; Drumshoreland!; Blackness!; Westfield!; Bathgate!; Armadale!
<i>plicata</i> Fr.	W.
<i>aquatica</i> Wahlb.	T.; W.; J.H.B.; Avon near Bo'ness (St. Acc.); Carribber (Evans).
<i>maritima</i> Mert. & Koch	T.; W.; Carriden!; Dalmeny!
<i>distans</i> Wahlb.	T.
<i>Festuca bromoides</i> Linn.	W.; Bo'ness (St. Acc.).
<i>ovina</i> Linn.	T.; W.; Linlithgow!; Fauldhouse! Kinneil!; Bathgate!;
<i>(d)iriuscula</i> Linn.	W.)
<i>rubra</i> Linn.	T.; near Dalmeny (McT.C. in Ex. Cl.); Inchgarvie!; Blackness!
<i>pratensis</i> Huds.	W.; Linlithgow!; Hopetoun!; Inchgarvie!; Bathgate!
<i>elatior</i> Linn.	T.; W.; Avon at Bo'ness (St. Acc.).
<i>arundinacea</i> Schreb - ?	T.
<i>Bromus giganteus</i> Linn.	T.; W.; Woodcockdale (Herb. Rec.).
<i>ramosus</i> Huds.	T.; W.; Dalmeny (Herb. Rec.)!
<i>sterilis</i> Linn.	W.; Linlithgow (Herb. Rec.)!; Carriden!; Dalmeny!; Bo'ness!; Kirkliston!
<i>secalinus</i> Linn. ^x	T.; W.; Kinneil (S.).
<i>hordeaceus</i> Linn.	W.; Linlithgow!; Hopetoun!; Carriden!; Kirkliston!
<i>inuloides</i> H.B.K. ^x	T.
<i>achypodium sylvaticum</i> Roem. & Schult.	T.; W.; Cramond Woods (Bot. Soc. lists)!; Dalmeny!; Hopetoun!
<i>Lolium perenne</i> Linn.	T.; W.; Linlithgow!; S. Queensferry!; Inchgarvie!; Blackness!
<i>multiflorum</i> Linn. ^x	T.; Linlithgow!; Blackness!
<i>Agropyron caninum</i> Beauv.	T.

<i>repens</i> Beauv.	T.; W.; Linlithgow!; Dalmeny!; S. Queensferry!
<i>juncum</i> Beauv.	T.
<i>Lepturus filiformis</i> Trin.	T.; W.; seaside near Blackness (Herb. Rec.).
<i>Nardus stricta</i> Linn.	W.; Drumshoreland!; Linlithgow!; Fauldhouse!; Bathgate!; Whitburn!; Armadale!
<i>Hordeum murinum</i> Linn.	T.; W.; Bo'ness!
<i>marinum</i> Huds.	T.; Bo'ness (S.).

LXXVIII. CONIFERAE.

<i>Taxus baccata</i> Linn.	T.; W.; Dalmeny!; Hopetoun!; Craigiehall!
<i>Pinus sylvestris</i> Linn.	T.; Linlithgow (B. & S.; Herb. Rec.)!; Dalmeny (Herb. Rec.)!; Kinneil!; Drumshoreland!; Kirkliston!

LXXIX. FILICES.

<i>Pteris aquilina</i> Linn.	W.; Kinneil!; Linlithgow!; Dalmeny!
<i>Blechnum Spicant</i> With.	W.
<i>Splenium Adiantum-nigrum</i> Linn.	T.; W.; Hopetoun (J.H.B.); Abercorn (St. Acc.); S. Queensferry!
<i>viride</i> Huds.	T.(?)
<i>Trichomanes</i> Linn.	T.; W.; Abercorn (St. Acc.)!; Linlithgow!
<i>Ruta-muraria</i> Linn.	T.; W.; Abercorn (St. Acc.); Carlowrie!; Linlithgow!
<i>Thyrium Filix-foemina</i> Roth.	T.; W.; Hopetoun (J.H.B.)!; Woodcockdale (Herb. Rec.).
<i>Phyllitis Scolopendrium</i> Newm.	Carriden (J.H.B.); Woods near Hopetoun House (Herb. Rec.).
<i>Cystopteris fragilis</i> Bernh.	T.; Woodcockdale (Herb. Rec.)!; Cramond!; Dundas!; Hopetoun!; Kirkliston!

var. <i>dentata</i> Hook.	T.; W.
<i>Polystichum aculeatum</i> Roth.	Hopetoun (J.H.B.).
<i>Lastrea Filix-mas</i> Presl.	T.; W.; Hopetoun (B. & S.)!; Cramond!; Dundas!; Kinneil!; Kirkliston!; Linlithgow!
<i>cristata</i> Presl.	W. (supposed error).
<i>aristata</i> Rendle & Britten	T.; W.; Carriden!; Dundas!; Dalmeny!; Kirkliston!; Cramond Bridge!; Bathgate!; Fauldhouse!; Hopetoun!; Linlithgow!
<i>Polypodium vulgare</i> Linn.	T.; W.; near Linlithgow!; Dundas!; Dalmeny!
<i>Phegopteris Dryopteris</i> Fée	T.; W.; Woodcockdale (B. & S.); Woods at Abercorn west from Hopetoun House (Herb. Rec.).
<i>polypodioides</i> Fée	T.; W.; Hopetoun (J.H.B.).
<i>Osmunda regalis</i> Linn.	T.; W.; Linlithgow (Herb. Rec.); Tod's Mill, Bo'ness (St. Acc.); Kinneil (I. B.B.).
<i>Ophioglossum vulgatum</i> Linn.	T.; W.; Hopetoun (J.H.B.); Carlowrie (G.; B. & S.; S.); Linlithgow (B. & S.; S.; Herb. Rec.); Dalmeny (B. & S.; S.; Herb. Rec.; Bot. Soc. Lists; St. Acc.).
<i>Botrychium Linaria</i> Sw.	T.; W.; Knock Hill (J.H.B.); Hopetoun House.

LXXX. EQUISETACEAE.

<i>Equisetum maximum</i> Lam.	T.; Bellsyde, Linlithgow (Bot. Soc. lists); Abercorn (J.B.; Evans)!
<i>arvense</i> Linn.	T.; W.; Woodcockdale (Herb. Rec.)!; Kirkliston!; near Carlowrie!; Linlithgow!; Dalmeny!
<i>pratense</i> Ehrh.	T.; W.; Woodcockdale (S.; Herb. Rec.; Bot. Soc. lists)!

sylvaticum Linn.	T.; W.; Lochcote (Herb. Rec.); Linlithgow (Herb. Rec.)!; Kinneil!
palustre Linn.	W.; Linlithgow (Herb. Rec.)!; Kirkliston!; S. Queensferry!
limosum Linn.	T.; W.; Linlithgow (Herb. Rec.); Drumshoreland!; Kinneil!; Fauldhouse!; Whitburn!

LXXXI. MARSILEACEAE.

Pilularia globulifera Linn.	T.; W.; Philpstoun Loch (I.B.B.; J.B.).
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